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CONTENTS

April 3, 1933

THE WEEK IN PERSPECTIVE 9

Undeflated Taxes, Freight Rates Slow Steel Recovery 11
Pig Iron Rate Reduced in March 12
New Equipment May Stem Railroad Passenger Losses 13
Mirrors of Motordom 15
Business News from Washington 16
Obituary 16
Personals 17

EDITORIAL—Effect of Uneven Deflation Retarding Recovery 18
THE BUSINESS TREND 19

Exhibits at World's Fair To Project Use of Steel in Houses 21
Stainless Steel Used Widely in Modern Bar Designs 24
Malleable Group Reviews Research 25
Convention Calendar 25
Large Uses of Steel in Small Ways—Pin Games 26
Improving Open-Hearth Design—Part V, Continued 29
Making the Most of Methods and Materials 34
New Books Worth Reading 36
Progress in Steelmaking 37
New Equipment 38

MARKET REPORTS AND PRICES 39-59
HERE AND THERE IN INDUSTRY 61
CONSTRUCTION AND ENTERPRISE 62
WHERE TO BUY 63
ADVERTISERS' INDEX 76

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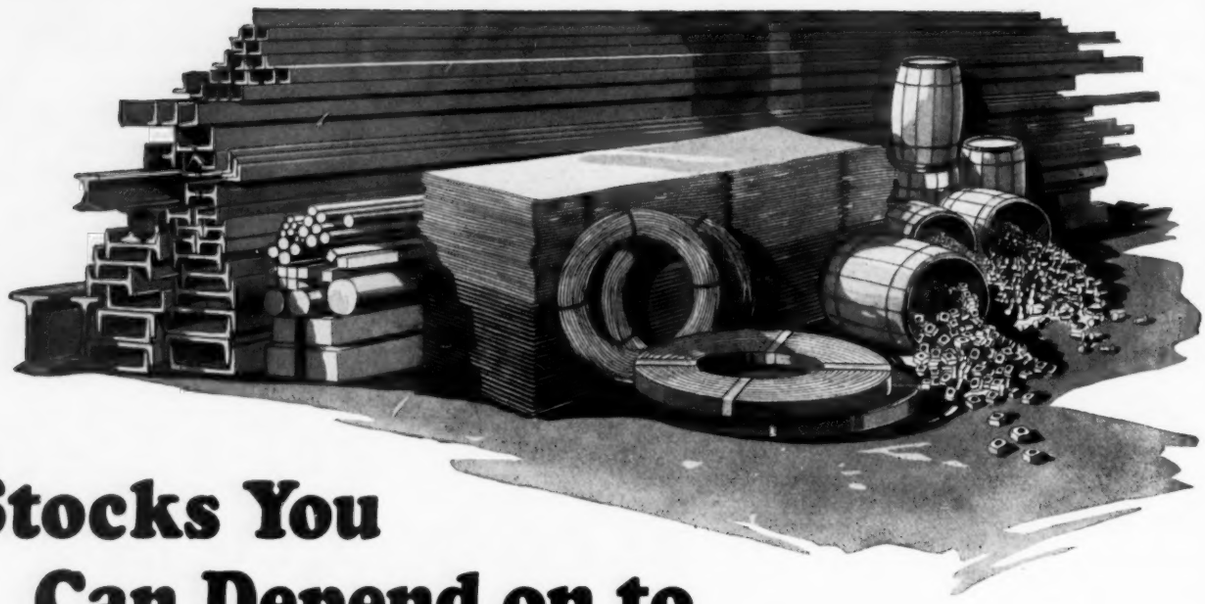

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STEEL-SERVICE

Volume 92 Number 14

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION • PROCESSING • DISTRIBUTION • USE

The Week in Perspective

WHEN the French in 1931 proposed to rescue Germany from financial chaos by making additional loans, ex-Secretary Stimson successfully countered with the analogy of an attempt to keep a tub full of water by pouring more in at the top without plugging the leaks at the bottom. Iron and steel producers, alarmed by their losses in 1932 and energized by the vigor of the new administration at Washington, into taking a stand for a more remunerative basis, are in the same category.

Taxes, Freights Still Live in the Clouds

Increasing prices is the obvious, direct solution, yet a comparison of taxes and freight and wage rates today with 1913 discloses (p. 11) that a most radical rise would not offset the drag of these undeflated factors. Galvanized sheets, for example, are now priced 5.5 per cent less than 20 years ago, but wages are 15.9 per cent higher, freights 97.8 per cent and taxes 177 per cent. From raw to finished products, taxes are the most onerous burden.

Railroads Find Allies in Alloys

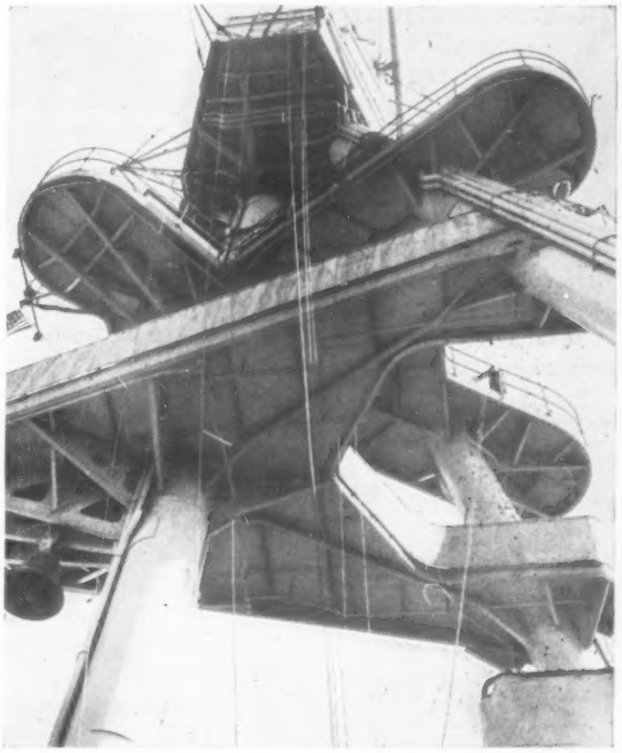
The railroads, meanwhile, are struggling with their own problems. To stem their passenger traffic losses, new and lighter designs of cars are coming forward, most of them self-powered (p. 13). Lightness being a prime consideration, steel is partially disadvantaged, although the new rust-resisting kind offers possibilities . . . . Railroad demand for iron and steel continues negligible (p. 44), and no revival is probable until the Roosevelt program for dealing with transportation is announced.

Releasing Brakes on Auto Production

However, the automotive industry, which has been idling along in low, has shifted to second. If Ford sustains a schedule of 50,000 units and Chevrolet 35,000, April will recoup much of the March debacle (p. 15). Mud slinging at Detroit is strictly a local affair, not bespattering the retail markets elsewhere . . . . The further slight lift in steel production last week, to 15.5 per cent (p. 50), was largely the sequel to broader releases of automotive material, inspired in part by apprehension over higher prices . . . . Due to a drastic reduction in line pipe, STEEL's composites (p. 39) of iron and steel prices are at a new depression low.

Over Bars or in Cans, Steel Awaits Beer

The bar over which beer will shortly be dispensed, as well as the new type of railroad passenger car, beckons to rust-resisting steel, for



Acme Photo

Steel tripod masts on United States warships are fabricated so two legs can be shot away and yet they will stand. This is a view looking up from the deck of the ARIZONA

decorative effects as well as serviceability (p. 24). Present-day soda fountains and restaurant equipment point the way, with drain boards, glass washing stations and other appurtenances of the new steel.... Legalization of beer raises hopes of tin plate manufacturers for a new market for tinned containers (p. 24), similar to large oil cans.

Steel Structures Not a Pride when Movable

A new market for steel which is expected to intrigue Century of Progress visitors this summer is the steel house, of which four will be exhibited in the home and industrial arts section (p. 21). These houses will break completely with the past and depict every type thus far developed.... Unable to see these lakefront exhibits from the city hall, Chicago aldermen are proposing (p. 23) to prohibit the erection of portable steel structures within the city limits. Labor objects because fewer workmen are required; fabricators come back with the argument that shop fabrication of materials is by no means automatic.... A revived market for steel is the pin game, favorite home amusement (p. 26), taking 1500-2000 tons in 1932.

Scrap Assuming International Importance

Iron and steel scrap also clamors for attention to a new market. Since Jan. 1 export orders for scrap total 185,000 tons, of which Japan alone accounts for 100,000 tons (p. 14). A logical sequel is action to set up an export organization.... A movement of scrap which apparently sets a precedent is from St. Louis to Pittsburgh, partially stimulated because the eastern seaboard is draining scrap to foreign ports (p. 12). Also new is an all-water shipment of steel products from Pittsburgh to the Pacific coast.... A new mill in the Los Angeles district provides the coast (p. 12) with full-finished sheets.... This helps stimulate Los Angeles in urging (p. 16) construction of a blast furnace at its port.

No Mill-Stream Quiet for Steel Dams

More serviceable steel plate facings for dams and reservoirs are fabricated by welding together channel sections of a special type (p. 24). Flanges of the channels flare outward, leaving an expansion joint when the channels are welded flange to flange.... Fabrication of the bulkhead and diversion tunnel gates for Hoover dam required 3500 tons for structurals (p. 23), a Pacific coast interest making and shipping them in six months.... New uses for malleable cast iron in the wear-resisting field are opened up by recent research work in nitriding it by a new process and otherwise hardening it by salt bath or other heat treatment (p. 25).

The VOICE of INDUSTRY

Communications appearing here do not necessarily reflect the opinion of STEEL *or of its editors.*

Approves "Outsiders" Indictment of Steel Industry

To the Editor:

More power to the thoughtful outsiders of good intentions; not only in respect to banking, public utilities, transportation, etc., but to steel production. Quite a few insiders can acquire wisdom from sources not representative of long experience.

There's much meat to chew on in the bystander's observations in your March 27 issue. I venture to raise my humble voice in approval, on behalf of the men who turn out the stuff that others sell, of much that the outsider has said.

The steel producers have been terrifically swatted by the depression. Some have kept their poise. Some appear to have got a funny notion that they could beat the game by a sales policy that has inevitably resulted in widening the circle of descending values. In many cases less volume has directly and quickly resulted in lower sales prices, and the latter have led (naturally, after a period of indecision) to lower wage rates—hour, day, or piece. As the tonnage booked failed to mount satisfactorily, more reductions in sales prices were made. And in turn they eventually put on the operating executive a pressure that has forced him to lop off every item of production expense possible to eliminate (sometimes at the expense of quality, no doubt).

Reductions Operate in Vicious Circle

Now this cutting of the cost could fall most heavily, in the long run, only on the millions of persons who are not in the salaried class. And because of their preponderant numbers they are the people whose buying capacity for goods, dependent on what pay-day brings to them, means good times or hard times for all of us, including executives and owners.

So long as the prices of steel products continue to be below reasonable costs, the operating heads will feel compelled to apply the most drastic economies in respect to materials and labor. And so long as that situation is permitted to exist we will be stuck in a morass which we didn't make, but which we have widened and deepened without the desire to do so. We can't with reason expect the laws of economics to reverse themselves, and to look for some act of God to stimulate manufacture in the face of contracting distribution of money and the resulting diminution of confidence. Incidentally, I don't think we can depend on a Landis or a Hays; or indeed, a Roosevelt. It's the job of each steelworks chief executive to lay down a sane sales policy, and make everybody stick to it. Let's have a moratorium on the indoor sport of looking to the people who run the shops to find still more places to cut the costs.

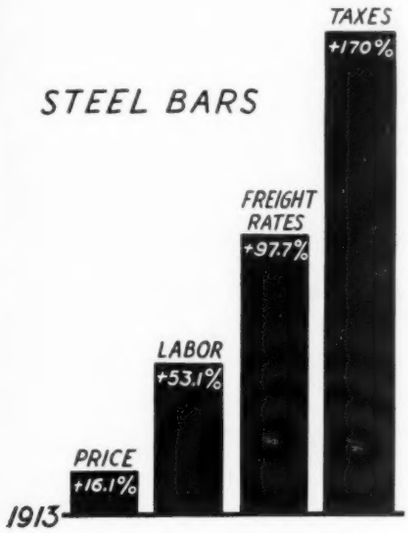
I may be wrong. If I am, a lot of operating men need to be corrected. Thus far, there's no evidence to justify conversion. Is it permissible to suggest this as a time for those who from the top can regulate the sales policies of the steel industry, to show whether they belong to a hard-boiled, hard-headed class of men who think straight? In the past they were credited with all of that. Less taxes? Good, of course. More nerve? Much better indeed.

R. A. BULL

Chicago

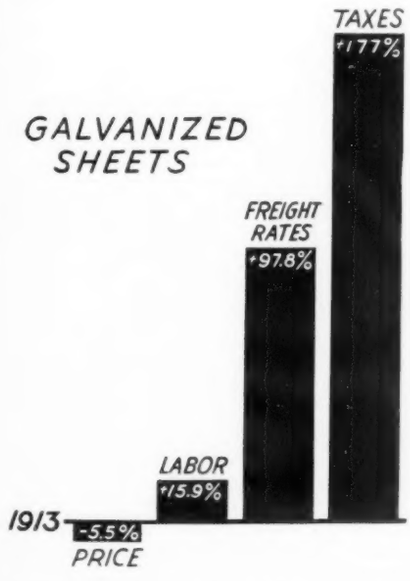
Undeflated Taxes and Freight Rates Slow Steel Recovery

UNDEFLATED taxes and railroad freight rates are riding the back of the iron and steel industry like the Old Man of the Sea. Their labor costs, producers have brought fairly well under control, comparing depression 1933 with prewar 1913. On prices, the industry has retreated even beyond 1913, to which the aggregate losses of integrated producers exceeding $150,000,000 in 1932, attest. But taxes and freight rates appear practically immune to the depression, as the accompanying charts comparing current levels with 1913 graphically portray.



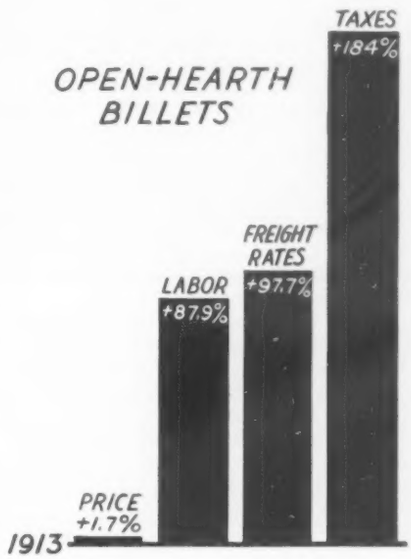
Assuming the experience of an independent midwestern iron and steel producer to be typical, the sum of local, state and federal taxes entering into the cost of a ton of pig iron is 307 per cent greater than in 1913. In other words, for every $1 paid in taxes before the war, $4.07 is now collected. Also, on a ton of pig iron, freight rates are 68.7 per cent greater than in 1913. But No. 2 foundry iron can be purchased at Chicago for $15.50 a ton, compared with a 1913 average of $16.10. The same strain is apparent in coke, billets, bars and sheets, in greater or lesser degree.

Next to pig iron, taxes weigh most heavily upon coke, being 236 per cent in excess of 1913. On steel bars, the tax burden is least, but still is 170 per cent greater than prewar. Freight rates are most onerous on hot-rolled sheets, being 97.8 per cent above 1913. These percentages refer to the factor they are in the current cost of production.



In the five accompanying charts, the least deflation is evident in every case in taxes. Excepting pig iron, railroad rates are next to taxes in point of retention of the increase in the past 20 years; at the blast furnaces labor has maintained more of its wartime gains than in other departments, but since hourly rates are the only available clew, a greater refinement of statistics might eliminate this exception. So far as price is concerned, coke, pig iron and galvanized sheets are lower today than in 1913, open-hearth billets are almost on a parity, bars are 16 per cent higher.

Prices used in the accompanying charts are Connellsville furnace coke, No. 2 foundry iron at Chicago, and



open-hearth billets, steel bars and galvanized sheets at Pittsburgh—all prices for 1913 being STEEL's averages and for 1933 being quotations on March 27. Labor percentages are based upon department of labor figures, except coke, for which no definite statistics are available and the United States Steel Corp.'s common wage rate is employed. Freight rates and taxes are predicated upon the experience of a midwestern iron and steel interest as compiled by *Daily Metal Trade*.

Pig Iron Rate Is Off in March

PRODUCTION of coke pig iron in the United States in March approximated 17,450 tons per day and therewith dropped sharply from the average daily rate of 19,752 tons in February.

The indicated rate in March was compiled from estimates of production supplied by 21 companies which on the last day of February were operating 41 of the country's 44 active furnaces. As of March 31, these same companies were producing iron from only 36 stacks.

On the basis of these reports, it is probable that only 39 of the country's 291 furnaces were active on the last day of the month.

With a rate of 17,450 tons per day, March output was the second lowest on record, the lowest being 17,035 tons per day in August of last year. Active furnaces, however, probably established a new low, the 39 making iron in March comparing with the previous low total of 41 in August.

During March, six furnaces were blown out or banked, and one resumed operation. All were of the steelworks or nonmerchant classification.

Lanahan for President, Avey Vice Pres. of A.F.A.

American Foundrymen's association has nominated Frank J. Lanahan, president, Fort Pitt Malleable Iron Co., Pittsburgh, as president, the election to take place at the forthcoming annual convention at Chicago.

Dan M. Avey, editor of *The Foundry*, Cleveland, was nominated for vice president.

Directors for a three-year term were nominated as follows: T. S. Hammond, president, Whiting Corp., Harvey, Ill.; R. J. Teetor, general manager, Cadillac Malleable Iron Co., Cadillac, Mich.; R. F. Harrington, metallurgist, Hunt-Spiller Mfg. Corp., Boston, and J. L. Wick Jr., president and general manager, Falcon Bronze Co., Youngstown, O.

Dr. H. Ries, Cornell university, Ithaca, N. Y., was nominated for director for one year.

Pittsburgh-Coast All-Water Movement of Steel Starts

Pittsburgh Steel Co., Pittsburgh, March 27, dispatched two barges with 1200 tons of nails, wire and pipe from its Monessen, Pa., plant, to Pacific coast destinations, believed to be the first all-water movement of steel from Pittsburgh to the west coast.

The steel is being shipped down the Ohio river to the Mississippi river to New Orleans, there to be reshipped in ocean steamers through the Panama canal. From Monessen to New Orleans is 2050 miles and from New Orleans to coast ports 3500 miles.

It is claimed that a saving of approximately $3 a ton will be effected. It will require 40 days for this shipment, or 10 days longer than the usual Pittsburgh-Baltimore-Pacific coast route. A second shipment is expected to be made shortly.

The Pittsburgh Steel Co. is preparing to move several bargeloads of scrap from the St. Louis district to Monessen, also believed to be the first movement of its kind, and partially a protest against "unliquidated" freight rates. The United States Steel Corp. a short time ago planned to move 15,000 tons of scrap from Baton Rouge, La., to Pittsburgh, but feared damage to its barges.

Institute Shows 1932 Pig Iron Output Off 52.34%

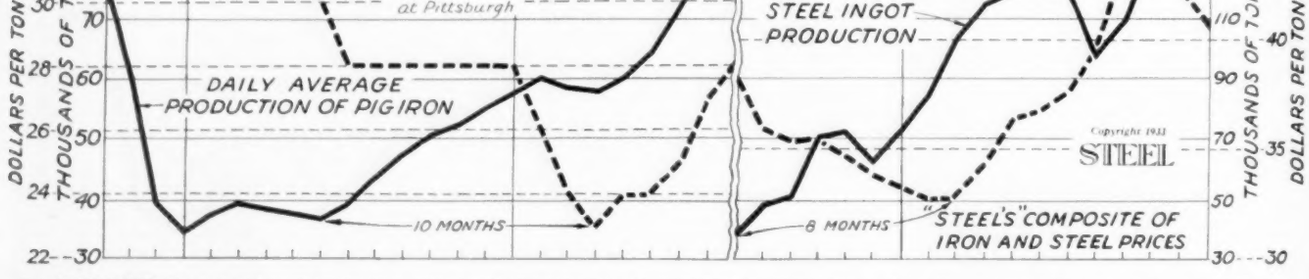
American Iron and Steel institute reports 1932 pig iron and ferroalloy production at 8,781,453 gross tons, a decline of 9,644,901, or 52.34 per cent. Ohio was the leading producer with 2,411,863 tons. Pennsylvania was next with 2,188,374 tons.

Of the total, 8,549,664 tons was pig iron and 231,789 tons was ferroalloys, the latter product being down 50.53 per cent. Of pig iron, 5,074,427 tons was basic, 2,220,468 tons bessemer and low phosphorus, 811,484 tons foundry, 419,723 tons malleable, 1558 tons forge, and 22,004 tons all other.

Of the ferroalloy total, 124,708 tons were ferrosilicon, 93,644 tons ferromanganese and spiegeleisen, and 13,437 tons all other.

Columbia Rolling Full Finished at Torrance

Columbia Steel Co., Pacific coast subsidiary of the United States Steel Corp., is now rolling full-finished sheets, No. 12 to 24 gage, at its works at Torrance, in the Los Angeles district. An outlay of over $500,000 was entailed by an addition to the plant, 175 feet long, and the installation of special equipment, including normalizing furnace, box annealing furnace, bar pickler, break down pickler, sheet pickler, scrubbing and drying machines, cold rolls, roller levelers and oiling machines, stretcher leveler, complete new laboratory and equipment, and crane.



PRODUCTION statistics of pig iron and steel ingots will be carefully scanned by the close buyer the next few months for an indication of the price situation. The depressions of 1907 and 1921 both disclose that rising production by no means connotes rising prices. As shown above there was a lag of ten months from the time pig iron output began expanding in the middle of 1908 until steel bar prices, which may be considered typical, began to strengthen in the spring of 1909. By the time of the 1921 depression, steel ingot statistics and the iron and steel composite of STEEL were available as indicators. Exactly eight months elapsed after the daily ingot rate turned upward before this composite began to recover. Now, the situation for this depression is as follows: Both pig iron and steel ingot daily rates rebounded after touching a bottom in August, 1932. Meanwhile, prices have continued to decline. Much as in 1908, it appears that March production figures will reveal a double bottom. If last August be regarded as the bottom of this depression, seven months have elapsed and a turn in prices would be indicated. But if the present period proves to be the bottom, it would be late fall before prices begin recovering

AN ULTRA-MODERN RAILROAD COACH IN ACTION: Built of stainless steel; welded; powered with diesel engines; and equipped with pneumatic tires, this car, the first of its type in the country, and a product of the E. G. Budd Mfg. Co., Philadelphia, now is part of the Reading's equipment

New Equipment May Stem Passenger Losses of Railroads

AN AID in the recapturing of passenger carrying business, but primarily a means of curtailing the heavy losses sustained by railroads as the result of depressed business conditions and the forfeiture of traffic to private automobiles and the bus, is indicated in the appearance of a new trend in design of railroad equipment for passenger service.

European reports on developments there show an increase in rail speeds, use of diesel-electric motive power and streamlined construction of carriers. In this country the introduction of the Autotram, a light, fast unit designed to revolutionize passenger service, has attracted attention. Just what these developments may mean to the steel industry and the possibilities of their universal adoption are subjects for speculation.

Strive for Cut in Weight

In the design of passenger carriers that will permit more economy of operation, a reduction in weight is one of the most important considerations, and in this connection aluminum alloys figure prominently. Adoption of such a trend in design would indicate a reduction in what normally is one of the steelmakers' largest markets, although the amount of steel required in the building of passenger cars actually is small compared with the huge tonnage that has been consumed in the manufacture of freight cars and rails and accessories.

Only about 60,000 passenger cars and pullmans are owned by Class I railroads, against nearly 2,250,000 freight cars, and the annual replacement of the latter prior to its recent and present almost complete cessation has been by far the principal steel outlet in the market for rolling equipment.

It is natural to assume also that in the event of the adoption by railroads in this country of the light, individual passenger-carrying units that such a transition would be a gradual one and hardly a complete one in any event. For branch line and short haul service, however, it is regarded as not unlikely that the next few years will witness changes in the type of equipment used that will promote lower operating costs and more efficient service. Such appears to be the goal in England and Germany, where trial runs of new trains have been carried out.

The German State Railways is expected to start service in May of its new "Rail Zeppelin" between Berlin and Hamburg, a distance of 178 miles. An average speed of more than 76 miles an hour was reported for its initial trip, 38 minutes less than that required for the fastest steam train operating on that run. Top speed was 93 miles an hour.

Fuel Economy Is Striking

The "Rail Zeppelin" is composed of two units, joined in the center and carrying 102 passengers. Power is supplied by two diesel-electric drives The cars are streamlined to cut wind resistance at high speeds. A recent trial run of the first diesel-electric driven train ever used on an English main line is reported to have required only 25 gallons of fuel, costing about $1.20, for the 113-mile trip from London to Birmingham.

So far as steel is concerned, its major contribution to lightness is in the pneumatic-tired, self-powered stainless steel passenger car of the Budd-Michelin type, of which several have been manufactured by the Edward G. Budd Mfg. Co., Philadelphia, one being for the Reading railroad.

This car weighs only 13,500 pounds complete, and with a full load of 40 passengers the average weight per passenger is 325 pounds. Constructed by the Budd shot welding process the stainless steel retains its desirable metallurgical characteristics and corrosion resisting properties.

Steel Not Entirely Out

Introduction of the Autotram by the Clark Equipment Co., Battle Creek, Mich., has aroused much interest. This unit is 60 feet long, streamlined, and easily attains a speed of 85 miles an hour from its 16-cylinder gasoline engine. Duralumin being used freely in its construction the Autotram weighs only 30,000 pounds. Rubber insulation is employed to eliminate vibration. Air conditioning is an added comfort feature for passengers.

Steel, however, makes important contributions to the Autotram. Electric steel castings are used for couplers and end braces as well as for the king pin support castings in the fish-belly beam. The wheel structure is of electric steel high carbon castings; the rims are high carbon rolled steel. Axles are high carbon steel tubing with chrome-molybdenum drive shafts. Propeller shafts and gears are chrome-nickel and chrome-molybdenum steel. Considerable steel also is used in the main and auxiliary power plants.

The Autotram weighs only 750

pounds per passenger capacity, this explaining its inherent economy of operation. The average weight of a pullman sleeper is about 75 tons, or 4700 pounds per passenger for a fully-occupied 16-section sleeper, while the ordinary passenger car weighs about 65 tons. Under recent light traffic conditions it is not unusual for a locomotive to be hauling from 20,000 to 40,000 pounds of car weight for each passenger carried.

Ingersoll-Rand Co., New York, and St. Louis Car Co., St. Louis, are introducing a new 600-horsepower, oil-electric rail car for hauling mail and baggage as well as passenger cars over short runs. This unit largely is of steel construction.

The employment of heavy cars and displacement of wood construction by steel has been dictated by the necessity for durability and safety, and it is this latter consideration that prompts some car builders to believe that railroads will be slow to adopt the light, fast units. Serious wrecks, involving large damage suits, might not offset the additional business received by virtue of faster schedules, and it is contended further that use of heavy equipment minimizes injuries sustained in the event of smashups.

Rate Reduction Needed

It is apparent that the railroads have lost business to the buses because of the lower fares rather than because of the speed factor, and that to regain this traffic a reduction in rates, possible only through lower costs, is necessary. So far as actual operating expenses other than labor are concerned, more efficient equipment offers the principal means for paring costs.

It may be expected that weights of cars will tend to decline moderately without a sacrifice of strength or riding comfort and that the use of gasoline or diesel engine-driven trains composed of only one or two units will become more general on short branch lines. Some of these now are in service, but they are designed for only average speeds.

Steam locomotives are capable of developing all of the speed commensurate with safety that is required of them; a rate of more than 100 miles an hour was developed back in the 80's. Great strides have been made in the design of more economical locomotives during recent years, but the railroads have been slow to replace their more inefficient units.

General business conditions, of course, largely are responsible for the inability or unwillingness of the carriers to invest in new equipment. Much of the progress in locomotive improvements has been accomplished since 1920, yet about 80 per cent of the slightly more than 50,000 existing units were built prior to that time. Only 2000 locomotives were bought during the past five years and less than 8300 in the past ten. In 1932 purchases totaled two.

Revived Purchasing Seen

It is contended that replacement of a 1920 or earlier model locomotive will pay for itself in a relatively few years, and unquestionably the recovery in freight traffic will be accompanied by large purchases of motive power that will provide marked economies in railroad operations and will aid in the establishment of more competitive passenger fares.

That the carriers are making some attempt to obtain additional passenger business is seen in moves to provide greater riding comfort, such as the development of air conditioning, even for day coaches, individual rooms instead of berths for sleepers, more comfortable day coaches and in lower rates for excursions and round trips. Fast electric suburban lines have proved profitable in some installations and have provided a service that the bus cannot duplicate. On these and moderately longer runs the lightweight trains now under development appear to have their most logical initial field; how widespread and successful their adoption will be for the more extensive trips time alone will tell, but in the drive for reduced weight steel may feel a moderate decline in use.

Scrap Dealers Forming Export Sales Body

Export orders for 185,000 tons of steel scrap since Jan. 1 are revealed by Benjamin Schwartz, director general, Institute of Scrap Iron and Steel, in announcing early formation of a scrap export organization under the Webb-Pomerene law.

Of the total, Japan has placed 100,000 tons, Italy 60,000 tons and Poland 25,000 tons. Further substantial orders are under negotiation, he said, with indications of the 227,000 tons exported last year being greatly surpassed, and possibly the high of 550,000 tons in 1929 being reached.

The proposed export organization, he said, will be confined to about 15 of the leading direct shippers of scrap to foreign countries, and will act as a central selling agency for the export of scrap at a fair price. It will standardize specifications and inspections and will establish credits for foreign mills.

These foreign purchases of scrap have lifted the eastern market to the point where eastern scrap plus the freight to Pittsburgh would make the delivered price at Pittsburgh nearer $12, compared with the local market of about $9. One result is a proposed movement of scrap by barge from the St. Louis district to Pittsburgh.

Reports are current that the Southern Railway is closing on the scrapping of some 15,000 freight cars and 100 locomotives, involving 200,000 tons of scrap. Seaboard Air Line is offering 25,000 tons of scrap.

Otis Reports Unverified

Two merger rumors concerning the Otis Steel Co., Cleveland, have been current. One aligns the company with an eastern interest, a second with a Cleveland district producer. Neither report is verified. A bondholders' committee was organized when the Otis company passed its bond interest March 1.

A TYPE OF RAILROAD COACH WITH WHICH STEELMAKERS MUST RECKON: With entire body of aluminum alloy, and much of its equipment of the same material, this streamlined, motorized car is capable of attaining a speed of 40 miles an hour in one minute, 60 miles in two, according to its builder, Clark Equipment Co., Battle Creek, Mich. The "autotram" is here shown on the Michigan Central railroad where it recently received numerous tests

DETROIT

THE crater of the bank volcano having been blown off last week when the publisher of *The Detroit Free Press* and the city's radio priest came to grips, Detroit now feels that it knows the worst, if not everything, and is beginning to calm down to the workaday task of manufacturing automobiles.

Not that the gale loosed by the banking holiday Feb. 14 and subsequent developments has blown out. Even under the considerate treatment promised, the liquidation of the two former leading banks will entail a distressing amount of wreckage. But seven weeks of ferment is enough for any city, commercial banking has become possible, and automobiles again are the leading topic.

For three weeks production of automobiles has been improving, though slowly, and indications are that April will recover to an encouraging total, considering the times. It may be recalled that truck and passenger car output, from the alltime low of 48,702 units last October, rose to 59,557 in November to 107,353 in December to 130,114 in January.

Official statistics rate February at 106,814 units, which is somewhat larger than week-to-week operations indicated. March, depressed by the banking hiatus, probably fell as low as October. At this time April schedules are obscure, but 80,000 appears to be a plausible minimum. These statistics include passenger car and truck assemblies in the United States only.

Ford last week crossed 1200 units a day on the way up, and Ford releases, both of parts and materials, for April indicate a month's total of between 40,000 and 50,000. As is the case with almost all manufacturers, Ford stocks of parts and materials are unbalanced. Some releases were issued last week, and more are expected this week.

Ford last week joined practically all other automobile manufacturers in making a deposit in the new national bank organized by the General Motors. The company also lost its bout with workmen at its Dagenham, England, plant, the strikers returning as individuals but at a wage scale slightly higher than the company attempted to enforce.

Chevrolet, now on a 4-day week, may assemble 35,000 units in April, although conditions are such as to make a schedule indefinite. In some departments Chevrolet has banks of parts for upward of 20,000 units, and mills have not shipped all material rolled prior to the holdups occasioned by the banking holiday. Hence Chevrolet's receipts of material this month will be a poor guide to its actual assemblies.

Bank on Spring Market

Ford and Chevrolet thus alone may roll up a total of 75,000 units in April, plus the activity of other interests, which for the most part continue sporadic. There still is a general disposition not to anticipate retail demand, but to synchronize with it, and in many plants a unit assembled is a unit sold. Chevrolet and Hudson-Essex appear most vigorous in going after spring trade, but a sudden lift to the market would cause an overnight resort to newspaper advertising by other makers.

Alfred P. Sloan Jr., president of General Motors, put the case succinctly when he said recently: "It is reasonable to expect with certainty that when the period of readjustment is over the automobile industry will not only maintain its position as the world's most important industry but its rate of recovery will also be accelerated by the depreciation and obsolescence of existing equipment which has taken place during the years of subnormal production."

Some proof of this confident outlook is discernible in the buying attitude of the industry. More in anticipation of firmer prices than for actual requirements, most first quarter contracts for iron and steel were fully specified. Buyers are not in any turmoil, but are feeling out any possibilities of covering for the remainder of the year. In practically all cases, protection to July 1 is the longest granted.

Truck business has never originated the tonnage of materials that passenger cars have, but it is possible that the return of beer may supply a needed fillip at this time. One authority has estimated that 2000 breweries will spend about $30,000,000 for 4600 trucks and 5000 passenger cars.

It is too soon to examine the truck market for evidences of the influence of beer, but a manufacturer of truck parts here the past week has released material for 10,000 parts which are thus earmarked.

A Milwaukee manufacturer of automobile frames is reported to have diverted part of its capacity to the manufacture of beer barrels, scheduling 8000 daily.

Willys, which has 4400 trucks to assemble for International Harvester, has got up to about 75 a day and this month expects to reach 125 daily. White Motor has closed on three fleet orders totaling 73 units.

White, incidentally, may emerge from the Studebaker reorganization as the strong unit of that group, its strength being proportionate to the $7,000,000 in cash and $590,000 in municipal bonds now in its treasury. A. G. Bean, president of White, is one of the three receivers.

The entire Studebaker setup, including Rockne, Pierce-Arrow, White and Indiana, is under close scrutiny. There has been some discussion of concentrating all passenger car production at South Bend. Last week the receivership was extended to Rockne, and George Graham, its vice president in charge of sales, resigned as part of the economy program of consolidating Rockne sales with Studebaker.

White, most properous of all Studebaker units, has been at some pains to inform the trade that the inter-

(*Please turn to Page* 47)

Business News Of Washington

MINDFUL of the difficulties of negotiating treaties with foreign countries for subsequent ratification by the senate, President Roosevelt is expected shortly to obtain tariff bartering power in advance. Before the present session ends, this power will be sought, and doubtless obtained, opening the way to tariff negotiations this summer.

It is recalled that the Dingley tariff act of 1897 permitted the President to make tariff agreements, by reduced rates on specified categories of commodities. It is reported that the tariff situation will be taken up in connection with trade restrictions and war debts, and that the new program will link these various subjects together in a series of interconnected conversations between the United States and the principal countries of the world.

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Attorney General Cummings states that the recent United States Supreme Court decision in the Applachian coal case does not automatically broaden the attitude of the department of justice toward antitrust laws. Each case will have to stand on its own merits, according to Mr. Cummings, who points out that the Appalachian decision does not give blanket authority for sales pools, although approving the specific coal pool.

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Reconstruction Finance Corp. has loaned $40,000 to Hartland, Wis., for a water system, and $19,000 to Longview, Tex., for a sewage disposal plant, cast iron pipe to be purchased for both projects.

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The words "all steel" or "all metal" will no longer be used in advertising a sheet metal product and refrigerators as sold by a certain corporation, nor will the words "steel" or "metal" be used in any way to deceive purchasers into believing that such products are constructed in their entirety of steel or metal, when this is not true, according to a stipulation entered into between the corporation and the federal trade commission.

Concentrating on Detroit

Rotary Electric Steel Co. (Michigan), Detroit, now building a plant in Detroit for the production of steel by the electric furnace-rotary cast process developed by H. M. Naugle and A. J. Townsend, will not start on other plants until the Detroit one is completed and in commercial operation. Reports have been current that a plant will be started soon in New England. It is stated that the possibilities of a New England plant are good, but no immediate construction is contemplated.

Aqueduct May Open Up California Ore Deposits

Industrial department of Los Angeles chamber of commerce is stressing the advantages of the construction of a blast furnace and cast iron pipe foundry at Los Angeles harbor, pointing out that the new Colorado river metropolitan aqueduct passes close to large resources of high-grade iron ore in southern California, within 200 miles of Los Angeles. Coking coal from Utah, Washington or British Columbia is available.

Other possibilities awaiting development, according to the chamber, contemplate reduction of local ores with cheap fuel oil or petroleum coke or low cost electric current from the Hoover dam.

Died:

WILLIAM THOMPSON, 75, for 46 years prior to his retirement in 1931 ilentified with the United States Steel Corp., at his home in 1vanston, Ill., March 26. He formerly was assistant to the president of the American Steel & Wire Co., at Cleveland.

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C. B. Dempster, 80, founder of the Dempster Mill Mfg. Co., Beatrice, Nebr., March 23.

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Albert L. Seaman, 53, formerly sales representative in Chicago for National Sheet Metal Co., Peru, Ill., at his home in Evanston, Ill., March 23.

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John J. McKenna, 67, officer and director of the Power Piping Co., Pittsburgh, at Pittsburgh, March 25, after an affiliation with the company since 1915.

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Archibald Fairbairn, 45, founder, Conshohocken Foundry Co., Conshohocken, Pa., March 20. He also was superintendent of the electric furnace department, Midvale Co., Philadelphia.

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H. B. Herts, 62, New York architect, credited with inventing the cantilever arch method of steel construction, at New York, March 28.

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Thomas Carter, 77, a former member of the Pennsylvania legislature and for a time up until 1926 in the employ of A. M. Byers Co., Pittsburgh, at Pittsburgh, March 24.

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John Adams, 63, resident of Pittsburgh for 48 years and for many years identified with the real estate department of the Jones & Laughlin Steel Corp., at Pittsburgh, March 26.

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Albert Mohr, 72, president, John Mohr & Sons, Chicago, manufacturers of boilers and blast furnaces, and general plate fabricators, at his home in that city, March 29.

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Hervey Schumacher, 60, treasurer, Sun Shipbuilding Co., Chester, Pa., at Swarthmore, Pa., March 26. Previous to 1914, when he left Pittsburgh, he had been in the banking business there.

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Erwin R. Brigham, 36, director, North American Car Corp., Chicago, and president, National Dairy Despatch Co., Mid-West Despatch Car Co., and Commerce Petroleum Co., at Glencoe, Ill., March 19.

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D. F. H. McDowell, 73, president, McDowell & Co., North Side, Pittsburgh, steel jobbers, and president of the affiliate Mercer Tube & Mfg. Co., Sharon, Pa., at Pittsburgh, March 25. He had been in business in Pittsburgh for 40 years.

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Andrew C. Pearson, chairman of the board of the United Business Publishers Inc. and the United Publishers Corp., owner of the Iron Age Publishing Co., New York, March 31. He also was president of the National Publishers' association.

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Henry J. Waddie, 64, president and general manager, Canadian Drawn Steel Co., Hamilton, Ont., March 29. Born in Scotland, Mr. Waddie went to Canada in 1901 as manager of the Algoma Tube Co., Sault Ste. Marie, Ont., and in 1904 founded his own company at Hamilton.

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Charles F. Gessert, 75, retired consulting mechanical engineer, at Brooklyn, N. Y., March 24. From 1890 to 1893 he was New York manager for the American Radiator Co. He was a former vice president of the Revolving Door Co. and was connected in various capacities with the Air Reduction Co. until his retirement about 10 years ago.

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Charles E. Eveleth, 57, vice president, General Electric Co., and former manager of its Schenectady, N. Y., plant, March 25. A graduate of Worcester Polytechnic institute in 1899, he became affiliated with General Electric in that year. During the World war he did valuable engineering work, including development of a submarine detector.

Industrial Men in the Day's News

Thomas Aurelius, Vice President, Colorado Fuel & Iron Co.

FROM wire mill clerk to vice president in charge of sales is his progress in 31 years.

IN addition to his experience at the plant, he has been in the selling end, at the El Paso and Los Angeles offices.

SINCE 1921 he has been supervising railroad sales. His headquarters are in Denver.

THOMAS AURELIUS, since 1921 in charge of railroad sales of the Colorado Fuel & Iron Co., Denver and Pueblo, Colo., was elected vice president in charge of sales by the board of directors, March 20.

This promotion caps 31 years of service with the company, Mr. Aurelius having gone with the Colorado company in 1902 as clerk in the wire mill office. He remained as clerk of this department until 1907, when he was transferred to the sales department. For two years he was stationed at El Paso, Tex., and then he was transferred to the Los Angeles office.

In 1910, Mr. Aurelius was again transferred, returning to Pueblo as superintendent of the wire mill. Some years later he was shifted to Denver as asistant to J. Chilberg, vice president and sales manager, and when Mr. Chilberg retired in 1921 Mr. Aurelius assumed the duties of the office and since then has been in charge of railroad sales of the company.

JAMES LIPPINCOTT, formerly president and general manager of the West Leechburg Steel Co., was elected chairman of the board of the company at its annual meeting March 27 in Pittsburgh. Mr. Lippincott succeeds J. W. Kirkpatrick, who died recently. J. L. Kirkpatrick, vice president, has been elected president to succeed Mr. Lippincott.

Mr. Lippincott entered the steel business in May, 1885, with Carnegie Bros. & Co. Ltd., Pittsburgh, where he was employed as a stenographer until October, 1888, when he was attached to the executive department of that company. Shortly thereafter he left to accept a position with Kirkpatrick & Co. Ltd., Pittsburgh, which was affiliated with a Chartiers Iron & Steel Co. in the production of sheets.

Mr. Lippincott served from 1900 to 1906 in the operating and sales department of the American Sheet Steel Co. after the latter company bought out Kirkpatrick & Co. and the Chartiers Iron & Steel Co. He resigned in 1906 to take up the duties of manager of the West Leechburg Steel Co., which he and associates had founded in 1897. Since 1906 he has served successively as secretary, general manager, vice president and president, until his recent election as chairman.

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Howard B. Maguire, assistant to the vice president and general manager of sales in the Chicago office of the American Steel & Wire Co., was appointed manager of the Detroit office of the company, April 1.

He succeeds M. W. Floto, who becomes assistant to D. A. Merriman, vice president and general manager of sales at Chicago.

R. C. MacDuff, formerly with the Morris & Bailey division of the company, at Pittsburgh, is assistant to Mr. Maguire, at Detroit.

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P. E. Floyd, who was Chicago manager for the Ludlum Steel Co., Watervliet, N. Y., prior to the formation of the Associated Alloy Steel Co. Inc., which he served in a similar capacity, has returned to the Ludlum company as district sales manager in the Chicago territory. He will supervise sales there of all Ludlum lines.

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Fred O. Smith, vice president, Vulcan Iron Works, Wilkes-Barre, Pa., has been elected president of the Wilkes-Barre Iron Mfg. Co., also of Wilkes-Barre, manufacturer of charcoal iron wheels, axles and miscellaneous car castings. He is a director of both companies and of the First National Bank of Wilkes-Barre, and a member of the American Iron and Steel institute.

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John C. Long, manager of publications, Bethlehem Steel Co., Bethlehem, Pa., is the author of a book "Lord Jeffrey Amherst: A Soldier of the King," published by the Macmillan Co., New York. In reviewing this life of the British soldier of pre-colonial days, the *New York Times* recently said: "Mr. Long has produced a thoroughly readable biography, with full and scholarly citations of sources tucked away in the back where they can easily be found by those who

(*Please turn to Page 60*)

EDITORIAL

Effect of Uneven Deflation Is Retarding Recovery

ONE of the most discouraging features of every business depression is the lack of uniformity in the degree and rate of deflation in inter-related activities. Prices never are in equitable balance even in time of prosperity, but when the inequalities existing at the beginning of a slump are magnified by uneven deflation throughout a long period of liquidation, the result in the acute stages of depression is an incongruous collection of conflicting price levels which seriously complicates the process of recovery.

A condition of this kind confronts the nation today. The prices of many commodities have been reduced far more than others. The costs of certain services have dropped as much as 75 per cent while those of others are higher today than during the period of prosperity. Wages range all the way from low levels of the nineties to the highest range prevailing during the lush years of 1928 and 1929.

This uneven distortion has given rise to much curious speculation as to whose prices are "out of line." Several statistical and news services have declared that steel prices still are too high. One service stated in 1932 that a further reduction of 31 per cent was necessary to bring steel prices "into line."

Steel Prices Low, in Spite of Inflated Costs of Rail Shipment, Taxes and Labor

The absurdity of these charges is apparent to anyone who is familiar with the principal elements in the cost of producing and distributing iron and steel. As shown in the article on page 11 of this issue, the prices of several representative iron and steel products are near or below 1913 levels, but the costs of freight, taxes and labor—all important items in production and distribution—are far above the prewar figures.

In the case of coke, today's prices are 25 per cent below those of 1913, whereas taxes are 236 per cent higher, freight charges are 76 per cent higher and wage rates are 65 per cent above. Today's pig iron prices are 3.7 per cent under 1913 quotations in spite of the fact taxes, freight rates and labor are 307, 69 and 100 per cent, respectively, over 1913 levels. Similar inconsistencies are shown for open-hearth billets, steel bars and galvanized sheets, although the disparity between price and costs for these products is not quite as pronounced as in the case of coke and pig iron.

Consideration of the three items brings up a host of reasons why they have not been deflated as much as many other costs. While wages still are above those of 1913 it would be difficult to reduce them much further because the majority of industrial workers already have suffered severely from reductions in hours per week or month, in addition to cuts in the hourly rates. A very definite opposition to further reductions in industrial wage rates is being expressed by many executives and this attitude is likely to grow stronger rather than weaker.

State and local taxes are on the downward trend, although much valuable time was lost before public opinion was sufficiently crystallized to enforce economy in government. Federal taxes still are high, but drastic economies are in sight. Generally speaking, the drive for lower taxes is progressing as favorably as can be expected.

Nation, Tired of Temporizing With Railroad Problem, Is Pressing for Belated Deflation

The problem of high freight rates is a sore point with the majority of producers, fabricators, distributors and consumers of iron and steel. Little effort has been made to reduce rates, although it is admitted by everyone that they are far out of line. The roads have been handled tenderly because their securities are widely held. Fear of injuring millions of investors has retarded a solution of the railroad problem. Opposition of the strongly entrenched labor organizations also has slowed efforts to force economies through consolidation and unification of existing lines. However, the situation now is reaching a stage where prompt action may be forthcoming. The federal administration recognizes the importance of affording relief not only to the roads but also to shippers, and therefore the prospect for more reasonable tariffs seems brighter.

It is impossible to determine the extent to which failure or tardiness in deflating certain important items has prolonged the depression. It is certain, however, that prompt action on taxes and freight rates—even though belated—will contribute to recovery.

THE BUSINESS TREND

Weekly Statistics Reflect Easing of Bank Tension

AFTER five weeks in February and March in which the weekly statistics of business had little significance other than to show the immediate effect of banking troubles, the records now are beginning to reflect the gradual easing of the strain.

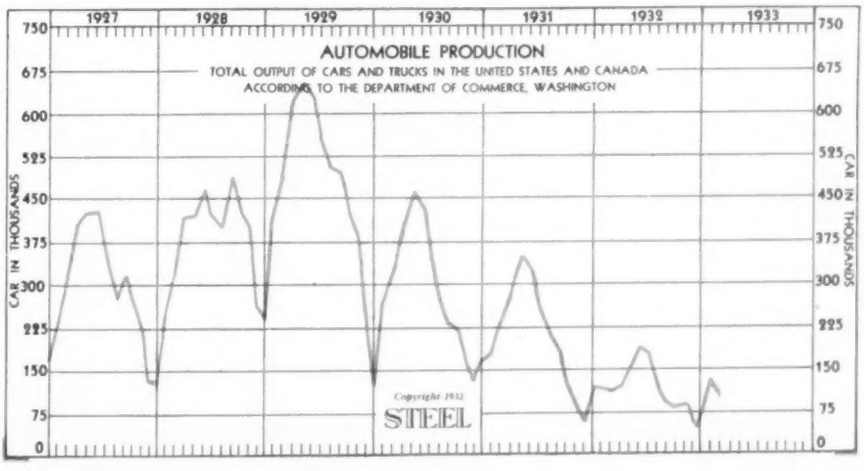
Loadings of revenue freight in the week ending March 18 indicated the first slight upturn from the low point established during the bank holidays. The freight volume for the week ending March 25 registered another modest gain. The output of electricity in the week ending March 25 was 1,409,000,000 kilowatt hours against 1,375,000,000 in the preceding week and 1,515,000,000 in the corresponding week of 1932.

Interruption to industry in March probably caused production of many important materials to fall below February levels. Steel ingot output, which averaged 20 per cent of capacity in February, will be nearer to 15 per cent for March. Indications also point to a lower rate in pig iron production. The temporary paralysis of business by bank closings also will be reflected by sharp reductions in the March output of automobiles, in building operations and in other steel consuming groups.

In industrial sections which are not affected by the failure of important banks to resume business, attention rapidly is shifting from financial matters to the new administration's policies pertaining to business. The extent to which the decision on the Appalachian coal sales pool forecasts a more liberal interpretation of anti-trust laws is of direct interest to many industries, including steel. The government's attitude, as demonstrated last week in its co-operation with oil producers in trying to arrive at a feasible plan for proration of production, also is being scrutinized closely by business men everywhere.

Business Awaits More Clearly Defined Indication of Government Policies

On the basis of action to date, it may be assumed that the present administration will try to help business conditionally. In other words, it will brush aside some of the technicalities that have blocked effective constructive co-operation, but at the same time it will be alert to curb flagrant abuse of privilege. Events in Washington during the next few weeks will bear watching, as they are bound to disclose the Rooseveltian attitude toward business.

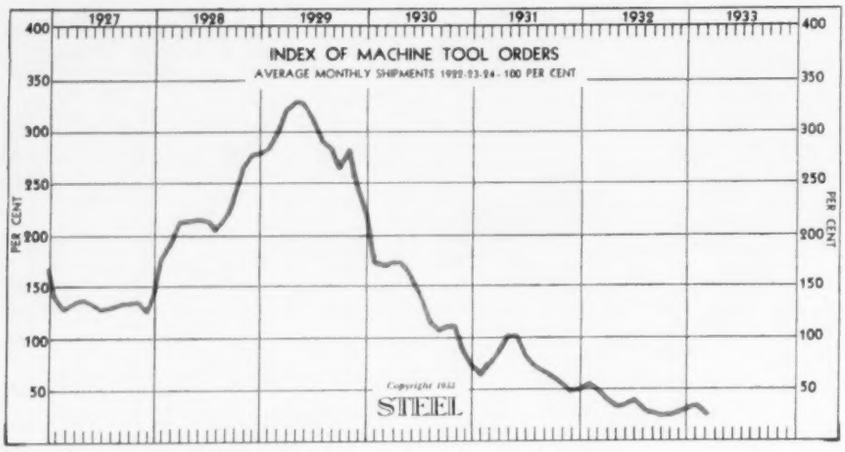


1933
Feb. 110,112
Jan. 133,472

1932
Dec. 109,542
Nov. 61,761

1932
Feb. 122,895
Jan. 123,075

1931
Dec. 123,973
Nov. 70,114



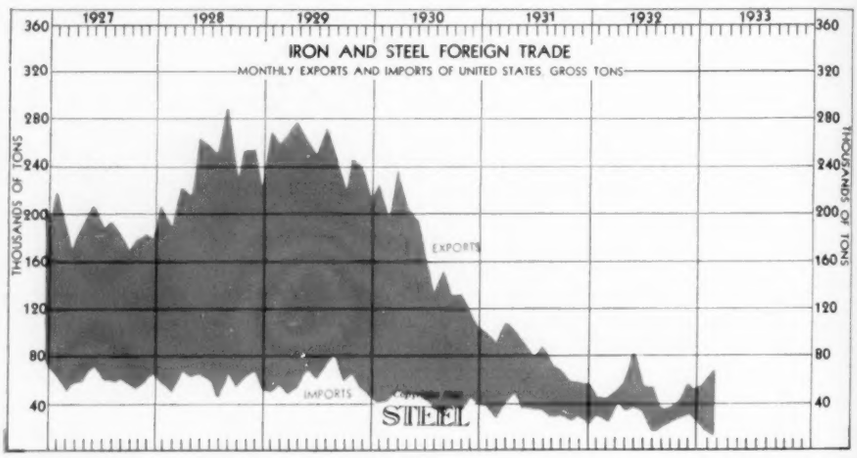
	Per Cent
February, 1933	27.5
January, 1933	33.1
February, 1932	54.8

Machine Tool Orders Reach New Low in February

The February index of machine tool orders as compiled by the National Machine Tool Builders association reached the lowest point in the history of the association. The three-month moving average for the second month of this year was 27.5 compared with 33.1 in the preceding month and 54.8 in February, 1932. The shipment index during February remained unchanged at 27 while unfilled orders declined from 48.6 to 35.3 for February.

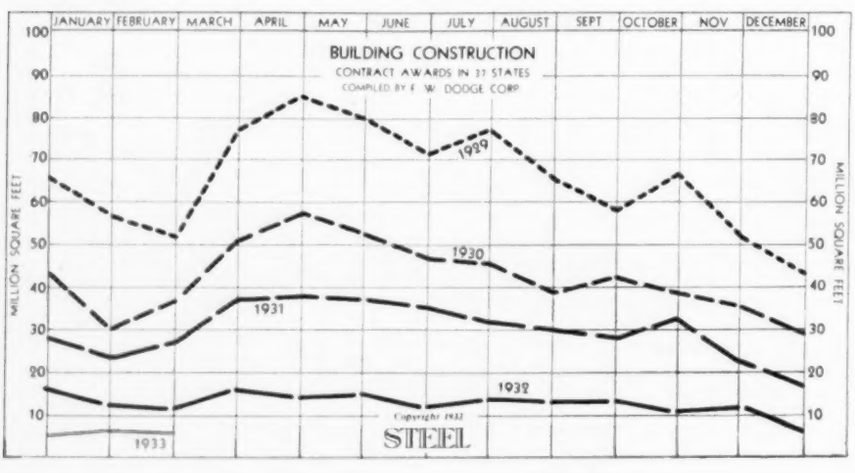
Trade Balance Improves as Iron and Steel Exports Gain

With iron and steel exports in February rising to the highest level since April, 1932, and imports at the lowest point since July, 1932, this country's foreign trade approached a more favorable balance. According to the latest report from the iron and steel division of the department of commerce, exports for February were 63,936 gross tons or 58 per cent greater than the 40,492 tonnage of February last year. Imports were 19,748 tons or 26 per cent below the 21,892 gross tons in January, 1933.



Exports	Tons
February, 1933	63,936
January, 1933	56,720
February, 1932	40,492

Imports	Tons
February, 1933	19,748
January, 1933	21,892
February, 1932	26,738



	Square Feet
February, 1933	7,382,400
January, 1933	8,452,500
February, 1932	12,299,000

Building Construction at Low Ebb in February

Building awards in 37 eastern states, as measured in new floor space, declined nearly a million square feet in February. According to reports of F. W. Dodge Corp., total construction for the second month involved 7,382,400 square feet as compared with 8,452,500 square feet in January. The valuations of construction contracts awarded in February was $52,712,300 against $89,045,800 in the same month last year, a decline of 41 per cent.

WITH the completion of this house in a Chicago suburb, General Houses Inc. formally enters the market to construct four and five-room steel houses selling from $2500 to $4500. Standard shop-fabricated sheet steel panels are used for walls

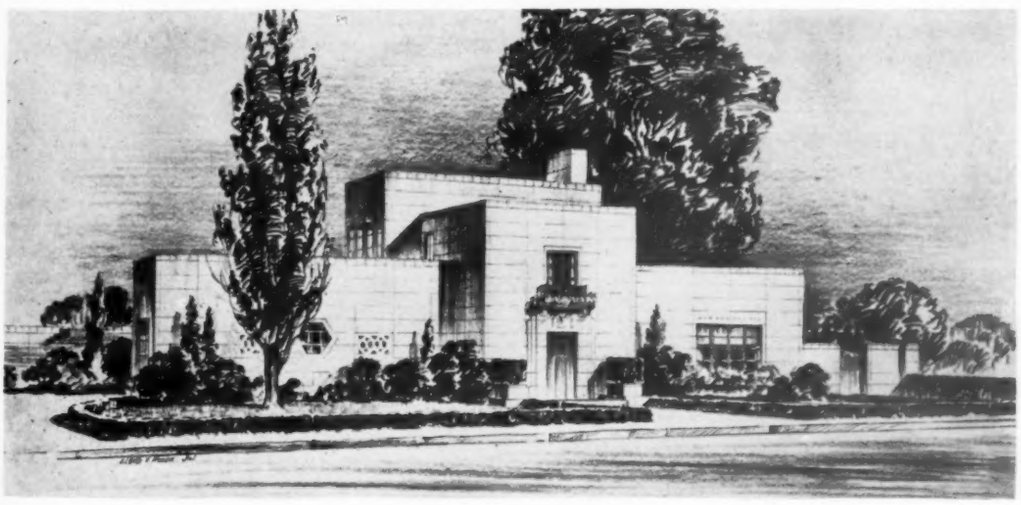
WORLD'S FAIR EXHIBITS TO PROJECT USE OF STEEL IN FUTURE HOUSES

HOMES of the future, rather than a display of what constitutes dwellings of the past, will be represented in the creations of architects and manufacturers which will form an important part of the Home and Industrial Arts exhibit of A Century of Progress exposition, Chicago's 1933 World's fair. Some conception of the part the steel industry is destined to play in domestic building may be gained from brief descriptions of the various houses to be ready for inspection when the fair opens June 1.

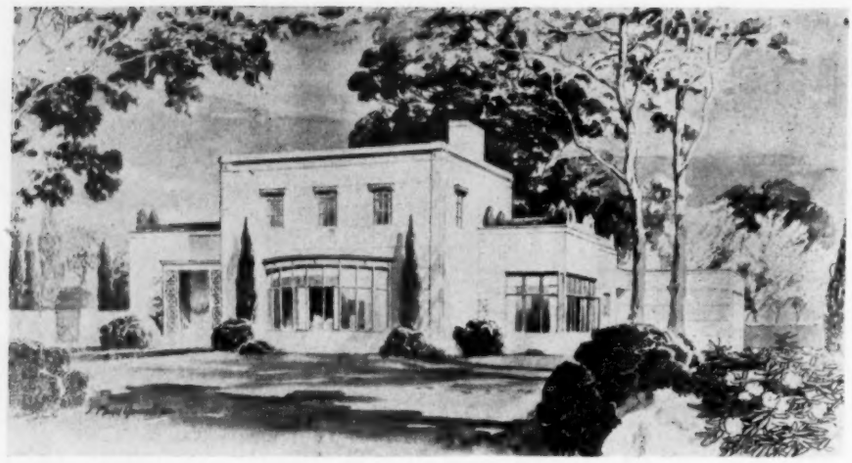
This exhibit will be made up of nine houses and a Home Planning hall. The former will be completely furnished with the most modern decorations and household appliances, while manufacturers of various equipment, such as heating, plumbing, air-conditioning, cooking utensil, refrigerating, interior decorating, and the like, will display their products in the special hall.

The exhibit of houses will incorporate many departures in home design, building materials and decoration, including various types of steel construction, experimental work on which has been discussed in STEEL over the past several years. With the exception of the Florida house, which is designed to meet the requirements of families of considerable means, the homes in this exhibit are intended to demonstrate that highly attractive living quarters now can be provided for the average family at a much lower cost than heretofore.

The Rostone house, being built by Rostone Inc., Lafayette, Ind., and the Indiana Bridge Co., Muncie, Ind., and shown in artists' con-



THIS residence, being built by Rostone Inc. and the Indiana Bridge Co., has a steel frame. Precast blocks of a new material composed of limestone waste and shale will constitute the exterior and interior walls, these blocks being bolted to the frame



A type of steel frame providing ease and economy of construction will be a feature of the house of Stran-Steel Corp. With this special framing, wood or composition building materials can be nailed to it just as they are nailed to wood

ception in an accompanying illustration, combines a steel building frame and Rostone, a new material composed of limestone waste and shale. This product is furnished in various colors and when polished has somewhat the appearance of marble. The material is prefabricated in sections, bolts being cast into the blocks while they are being made and fitting into slots of the steel frame. Rostone is used for the roof deck, exterior walls, interior walls of the living room and entrance hall and for the floor of the entrance hall.

The Stran-Steel house, to be exhibited by the Stran-Steel Corp., Detroit, and shown in one of the illustrations, will be of modern international design and includes a type of steel frame which provides ease and economy of construction. Important features of the framing are: Simplicity which permits carpenters without any special training to lay it out and erect it on the job just as they would lumber; and the fact that collateral building materials such as Celotex, Sheetrock and wood veneering may be nailed directly to the frame work.

Special Nailing Slots

Stran-Steel consists of six main elements and six plate attaching means made of 16-gage, 0.25 per cent carbon steel, formed, assembled and coated with a rust-resisting enamel. Nails are secured to the elements by driving them into space grooves running lengthwise of two sides of all-steel studs and joists. When building materials are nailed to the elements, the nails follow the sinuous shape of the spaced grooves and clinch themselves into place. While they hold twice as firmly as in wood, they may be removed with an ordinary claw hammer without injuring the metal members, thus giving them full salvage value when used in temporary buildings.

While the joists, studs and plates are twice as strong in bending and three times as strong in compression as the corresponding members of lumber, the manufacturer claims this type of house does not exceed the best wood framing material in total weight or in cost.

Exterior of the Stran-Steel house will be covered with Glassiron Macotta slabs. This material is made by the Maul Macotta Corp. and the Wolverine Porcelain Enamel Co., Detroit, and consists of a layer of Haydite, covered with thin-gage steel, on which is applied a weather-resisting coating of baked enamel. No plastering is required for either the exterior or interior, the elimination of use of water, except for the laying of the concrete floor slabs, permitting rapid erection in cold weather. The house will be well insulated for temperature control in all seasons. Heating, ventilating and the air temperature regulator systems are a product of the Fox Furnace Co., Elyria, O., subsidiary of the American Radiator Co.

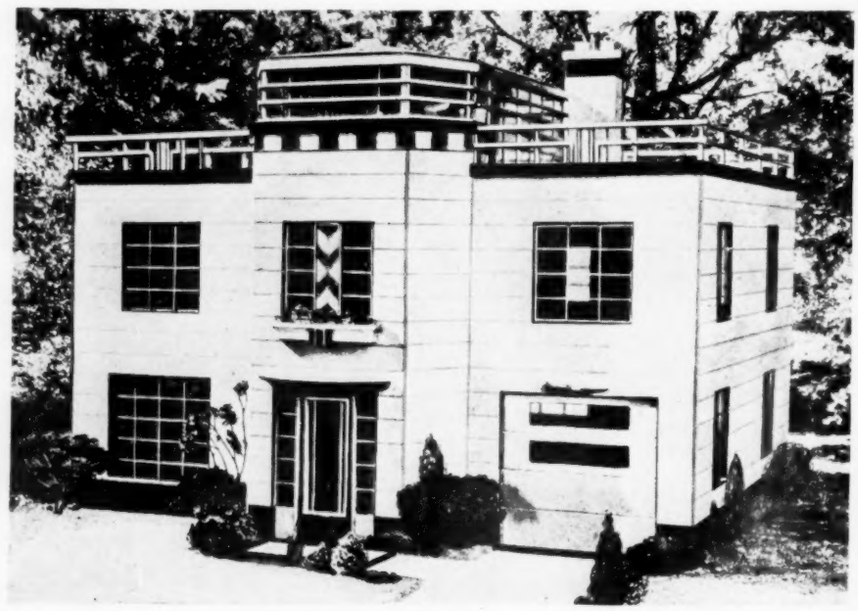
The American Rolling Mill Co.-Ferro Enamel Corp. house will be similar in construction to several built elsewhere recently, details of which were published in the Jan. 25, Aug. 15, Aug. 29 and Oct. 17, 1932, issues of STEEL. This house, shown in perspective in an accompanying illustration, will have a flat deck roof, on which a solarium and porch are located, and will be built entirely of sheet steel. About 14 tons of 16 to 20-gage sheets will be required for the structure.

Partially Welded in Shop

Wall units, the height of the house and of various widths, will be welded together in the shop, and no structural steel will be employed. Panels of porcelain enameled sheet metal fastened with helyx nails comprise the exterior. Steel casement window frames and sash will be used, while all door frames as well as floors and roof deck will be of steel. Surface Combustion Corp., Toledo, O., will furnish gas heating and cooling equipment.

The exhibit home of General Houses Inc., Chicago, also will feature pressed steel construction. Details of this house have not been decided upon definitely, however, a brief description of the first completely equipped steel house to be built by the company and just recently turned over to its new owner, may give a general idea of the construction to be followed.

Located on a high bluff overlooking Lake Michigan in Hubbard



Constructed entirely from sheet steel, this house to be built by the American Rolling Mill Co. and Ferro Enamel Corp. will require about 14 tons of 16 to 20-gage sheets. Porcelain enamel panels will comprise the exterior

Woods, Ill., this house, shown in one of the illustrations, is the result of three years of study and research on the part of General Houses and the experience of the various companies co-operating in its manufacture.

This marks the formal entry of the organization into the market for the sale of four or five-room houses to sell from $2500 to $4500, depending on equipment. Two and three room houses will be offered at a later date in a lower price range. Economies of mass-production and prefabrication are being adapted to the manufacture of these houses, while at the same time the necessity for variety of outward appearance and interior arrangement is being recognized. This variety is being accomplished through the use of standard parts which provide for a wide flexibility of design and at the same time for rapid assembly and lowered cost as production of the houses is increased.

Units Are Bolted Together

Walls of the house are made up of copper-bearing steel sheet panels, 4 feet wide and ceiling high. The standard units are fabricated as solid panels or as containing space for placement of doors, windows or transoms. The roof and floor are made up of steel beams and insulating material. When the panels arrive at the building site, they are merely bolted in place on the steel shapes, and are self and roof-supporting, discharging all duties formerly demanded from frames, lathing, plaster and sheathing. Specially-designed insulation of corrugated box board 4 inches thick provides both insulation and interior wall surface and is claimed to be the equivalent of 36 inches of masonry. Exterior of the steel panels is painted any suitable color.

The foundation consists of spaced concrete piers, provided with a small cellar or access trench to house meters, utilities, service connections, etc. Partitions are made up of sound-deadening insulation panels. When fully equipped these houses will include air conditioning, refrigeration, plumbing, lighting, complete kitchen and bedroom casework, interior and exterior painting and roof-deck. Erection eventually is expected to take only two weeks or less. Additional rooms or sections may be easily added.

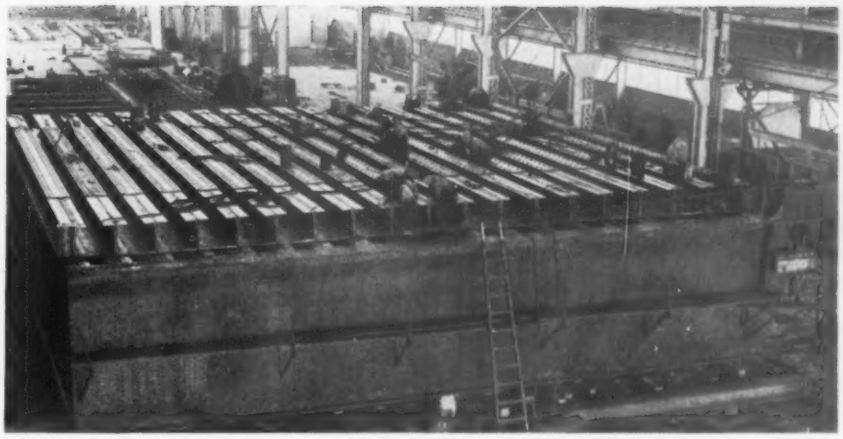
Several leading manufacturers have co-operated with General Houses Inc. in its developmental work to date. Inland Steel Co., Chicago, is furnishing steel products which are fabricated by the Pullman Car & Mfg. Corp. Container Corp., United States Gypsum Co. and others are supplying insulation materials and finished wall surfaces. Further technical advice is being provided by Curtis Companies Inc., which is supplying all mill work, American Radiator Co., Standard Sanitary Corp., Pittsburgh Plate Glass Co., Concrete Engineering Co. and Standard Gas Products Corp. Kroehler Mfg. Co. is co-operating in the design of a complete line of furniture, suited in character and price to General Houses prospects.

Dealers to handle sales of these houses now are being appointed and for the present activities will be confined to an area within a radius of 250 miles of Chicago.

Other Structures Planned

Other houses to be shown in the Home and Industrial Arts exhibit include the Masonite Corp. house, the Common Brick Manufacturers house, the Lumber Industries house, the Moore "Designed for Living" house and a special home to be erected by the state of Florida. In the brick house the pipe distributing system for both the heating and cooling systems will be the same and will employ a Timken oil furnace and IIg electric ventilating equipment. This is a recent development in summer and winter air conditioning facilities.

Home Planning hall, an L-shaped structure, will comprise 47,200 square feet of exhibit space. Among companies which are sponsoring exhibits are; American Encaustic Tiling Co. Ltd., American Gas association, American Stove Co., Bryant Heater & Mfg. Co., Copeland Products Inc., Holland Furnace Co., Iron Fireman Mfg. Co., Servel Sales Inc., Surface Combustion Corp. and Weil-McLain Co. In addition, the Johns-Manville Co. is erecting a special building to house exhibits of its various products for the control of heat, cold, sound, fire and motion.



STEEL TO CONTROL WATER FLOW AT HOOVER DAM. Some 3500 tons of steel was involved in the bulkhead and Stoney gates for the Boulder Canyon project fabricated in the plant of the Consolidated Steel Corp. Ltd., Los Angeles. The contract for this work was taken in June, 1932, and final shipment was made on Nov. 15. The gates were designed by the bureau of reclamation at Denver and all work was performed to the specification and under supervision of reclamation department engineers. The bulkhead gates are to be used in the upper portals of the diversion tunnels and will, when closed, shut off the flow of water through the tunnels, thus starting the impounding of water behind the completed dam. The Stoney gates are to be used as service gates at the lower portals of the tunnels

Chicago May Prohibit Portable Steel Buildings

Erection of portable steel structures within the city limits of Chicago will be prohibited if a resolution which has been introduced before the city council is successful of passage.

The sponsor of this measure is opposed to the reduction in number of skilled workmen required in the building of steel houses, interest in which has been expanding rapidly and which is expected to be stimulated further by the comprehensive exhibit to be shown at the Century of Progress exposition here this summer.

While the steel houses introduced to date permit rapid erection and involve less hand labor upon assembly than do the older types of structures, considerable shop work is required in the fabrication of materials before they are moved to the building site. Loss of work for carpenters and bricklayers in the event of widespread adoption of the steel house partly will be offset by additional shop employment.

New Heating Element Alloy

A new series of nickel-chromium alloys known as Nichrome V has been announced by the Driver-Harris Co., Harrison, N. J. Growing demands for quicker heating, greater overload capacity, high temperatures and longer life are said to have led to the development of this new heating element material.

Stainless Steel Used Widely In Modern Bar Designs

BEER and the bar have gone modern during their legal hibernation since Jan. 16, 1920, and those who anticipate the replica of the old massive bar-room fixtures to accompany the return of the amber liquid have reckoned without the developments that have taken place in sanitation, beverage engineering, refrigeration and decorations the past 13 years. The old type of bar, with its brass foot rail, brass cuspidors ponderous wooden construction and expansive mirror, is a thing of the past so far as new equipment is concerned. In its place has stepped the modern unit of marble and stainless steel.

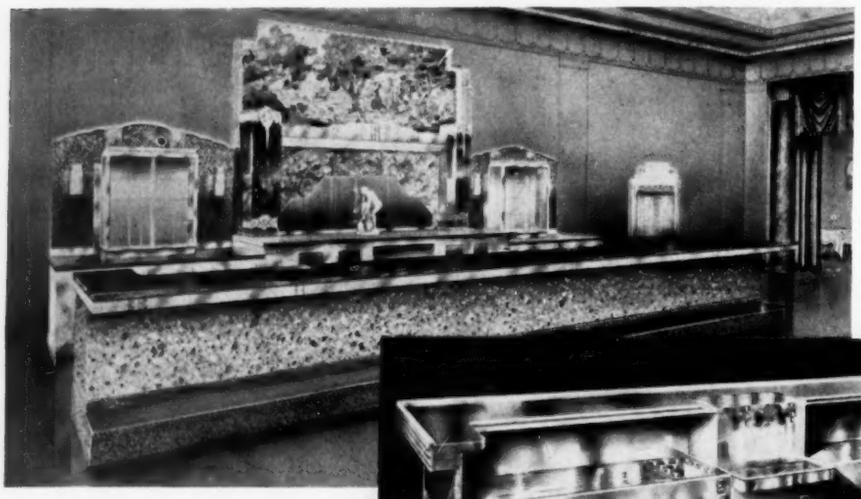
This evolution is easily explained by the trend in design of soda fountains since the advent of prohibition. The plain white units have developed into the attractive dispensing bars which predominate the modern drug store and confectionery shop. Had there been no prohibition, bars for serving beer and other alcoholic beverages would have experienced the same treatment in design as have soda fountains and would be similar to those now being offered as the result of legal approval of the recently forbidden beverage, according to the Liquid Carbonic Corp., Chicago, manufacturer of soda fountains.

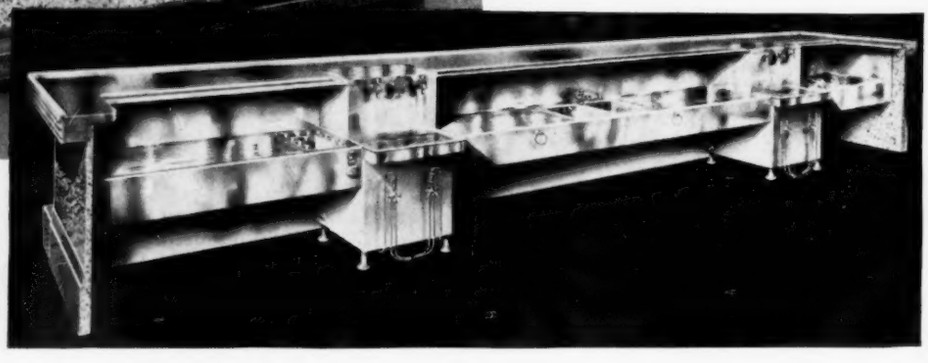
The new bars are being made in the same varieties of decorative marbles that characterize the smartest food and drink dispensing establishments. The beer cooling and tapping units and the drainboards are the last word in engineering efficiency and practicability. A marble step, which matches the vertical structure of the bar serves in the stead of the old-time brass foot rail. Tops of the bars are either of mahogany or the new composition now popular in table tops, providing a soft surface to prevent noise and breakage, and yet hard enough to be impervious to the penetration of liquids.

Steel Reflects New Era

Rust-resisting steel figures prominently in the new bars, principally from the standpoint of mechanical efficiency but also in the decorative form. In the unit shown in the accompanying illustrations, the edge of the bar top as well as the back bar structure achieves its decorative effect from the liberal use of this metal. The principal use, however, is apparent from a back view, illustrating the drain boards and glass washing stations, where stainless steel is used throughout. The temperature and draft control units are made of the same material.

For small shops a bar only slightly more than 6-feet long and 3½-feet high is being offered. This unit accommodates two half-barrels of beer and is mechanically refrigerated or direct iced. The complete exterior is covered with stainless steel.





STAINLESS steel is used liberally in this new bar for both serviceability and decorative effect. Principal use, however, is for drain boards and glass washing stations, as shown in the lower illustration

See Beer in Tin Cans

Return of legalized beer and light wines has brought about several unusual designs for containers. Tin plate manufacturers have been active in the consideration of this market with the hope in mind of popularizing a tin can beer container which, being similar to a large oil container when opened, will be useless for other than scrap when the contents have been removed. Leading brewers are understood to look favorably on the development.

Develops New Steel Leak-Proof Dam Facing

Letters patent for a steel leak-proof dam facing have been granted to W. H. Bailey, chief engineer, Colorado Fuel & Iron Co., Pueblo, Colo., and assigned to the company.

The steel facing is designed to provide a leak-proof construction which can be applied to earthwork and rock dams and reservoirs at a moderate cost, affording at the same time a maximum of washout protection. The facing is comprised of special type steel channels placed flange to flange, with the outer edges of the flanges of adjacent channels welded together.

An important feature of the channel is a slightly outward flare of the flanges to allow a clearance between the bases of the flanges of adjacent channels. This provides an expansion joint for each channel and is said to overcome lateral expansion which is found objectionable with steel plate facing. It is claimed also that the new facing is approximately ten times stronger and resistant to bending than steel plate construction.

In fabrication, the channels can be welded together in the shop into battens approximately 8 feet wide and 20 or more feet in length, using an automatic arc welding equipment. These battens then can be shipped to the dam or reservoir site and welded in place on the dam face.

Malleable Group Reviews Research

RESULTS of a number of important research projects were considered at the quarterly meeting of the Malleable Iron Research institute held in Cleveland, March 29.

Enrique Touceda, consulting engineer, Albany, N. Y., reported on the investigation of variation of carbon content at different intervals in pouring and recounted the progress of experiments on nitriding malleable iron under a new process. The application of this product and also malleable iron hardened under a salt bath and with heat treatment opens new uses in the wear resisting field.

President E. E. Griest, Chicago Railway Equipment Co., Chicago, reported widened applications of malleable castings where cost, strength and corrosion resisting properties are important.

Three Surveys Presented

Three completed surveys covering production and selling problems were presented by the secretary of the institute, Robert E. Belt, Cleveland. The price trends in malleable cast iron, studied in relation to the railway, automotive, implement and general jobbing fields, were compared with steel prices and various composite averages over a period of years. The effect of variations in estimating weights of castings from blue prints for cost and price purposes was shown to exert a profound influence.

Another report covered types and makes of wheels, speeds, inspection of speeds, guards, rests and other safety factors in operating grinding wheels in casting finishing.

T. M. Jordan of Stevenson, Jordan and Harrison, Cleveland, reported on the results of a survey conducted on rate setting procedure in member plants. This study, which is based upon time required for various operations in castings production, gives a basis for wage remuneration. Action was taken to utilize the services of the firm on work of member plants.

The recent decision of the United States Supreme Court in the Appalachian Coals Inc. case, involving the legality of group selling, was reviewed by Hubert B. Fuller of Cull, Fuller & Laughlin, Cleveland.

Pattern Designs Built Up Easily with Linoleum

Often, when it is necessary to change a pattern slightly, considerable expense and time may be saved by building it up with scrap linoleum to the required dimensions rather than making a new pattern. Many patterns needing a slight change in diameter are altered easily in this manner.

Changes necessitating building up of the pattern are encountered when it is desired to cast steel from a pattern designed for cast iron, or for

casting iron from a pattern designed for brass. Also, when it is desired to make a gear with an additional tooth from a standard pattern, linoleum is useful.

The accompanying illustration shows the use of linoleum on a 120-inch gear pattern at the Nuttall plant of the Westinghouse Electric & Mfg. Co., Pittsburgh.

Gear Makers Announce Program for Meeting

American Gear Manufacturers association has announced its annual meeting to be held at the Penn-Lincoln hotel, Wilkinsburg, Pa., May 4-6.

The program includes five technical papers as follows: "The Bullard-Dunn Process for Descaling Metals as Applied to the Cleaning of Heat-Treated Gears," by F. T. Bullard, Bullard Co., Bridgeport, Conn.; "Heat Treatment of Transmission Gears," by E. F. Davis, metallurgist, Warner Gear Co., Muncie, Ind.; "Welded Gears," by Everett Chapman, director of research and engineering, Lukenweld Inc., Coatesville, Pa.; "Lapping of Gear Teeth," by R. S. Drummond, president, National Broach & Machine Co., Detroit; and "Combination Motor and Reducer Units," by R. S. Marthens, manager, gearing engineering department, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Time will be provided for complete reports from 11 active committees embracing research, bevel and spiral gears, herringbone gears, inspection, keyway, metallurgical, sprocket, spur gear, tooth form, nonmetallic, and railway mill and mine.

The commercial standards committee has arranged a unique program touching upon sales and service with two one-act plays, "A Sales Lesson" and "What Was Left Out," as features.

J. C. McQuiston, First National Bank building, Wilkinsburg, Pa., is manager-secretary of the gear makers' association.

Convention Calendar

April 27-28—American Welding society. Annual meeting at Engineering Societies building, New York. M. M. Kelly, 33 West Thirty-ninth street, secretary.

May 4-6—American Gear Manufacturers association. Annual meeting at Penn-Lincoln hotel, Wilkinsburg, Pa. J. C. McQuiston, First National Bank building, Wilkinsburg, Pa., manager-secretary.

May 11 — Electrochemical society. Spring meeting in Montreal, Que. Colin G. Fink, Columbia university, New York, secretary.

May 25—American Iron and Steel institute. Spring meeting at Hotel Commodore, New York. H. H. Cook, 350 Fifth avenue, New York, secretary.

June 12-15—National Association of Purchasing Agents. Eighteenth annual convention and exhibit at Hotel Statler, Boston. George A. Renard, 11 Park Place, New York, secretary.

June 20-23—American Foundrymen's association. Annual meeting and exhibit at Stevens hotel, Chicago. C. E. Hoyt, 222 West Adams street, Chicago, executive secretary.

June 25-30—Engineering Week at Century of Progress exposition, Chicago.

June 25-30—Sixth Midwest Engineering and Power exposition at Coliseum, Chicago. G. E. Pfisterer, 308 West Washington street, Chicago, director.

June 26-29—American Society of Mechanical Engineers. Semiannual meeting at Stevens hotel, Chicago. Calvin W. Rice, 29 West Thirty-ninth street, secretary.

June 26-30—American Society for Testing Materials. Annual meeting at Stevens hotel, Chicago. C. L. Warwick, 1315 Spruce street, Philadelphia, secretary.

June 28—Engineers Day at Century of Progress Exposition, Chicago.

REMEMBER way back when you dropped a marble at the top of a pinboard, and watched it "trickle" down to a pocket, beating your opponent by scoring a higher numbered pocket? Manufacture of the modern version of that game requires 1500 to 2000 tons of steel annually

LARGE USES OF STEEL IN SMALL WAYS

240th Article ◆ Pin Games

WHEN someone discovered that many individuals could become engrossed in attempting to propel a small ball around various obstacles into a hole, and would pay for the privilege of doing so, it started a boom in the manufacture of this equipment and, incidentally, furnished the steel industry last year with orders for 1500 to 2000 tons of material.

Pin games, as they are commonly called, represent a modern version of what was a toy for children years ago. The latter part of 1931 the general principles of the game were incorporated in a more elaborate machine and the idea quickly captured the public's fancy. Since that time expansion in production and in varieties of pin games has been rapid, output for 1932, a banner year, being estimated at around 1,000,000 units.

While pin games are designed for coin operation when located in public places they also are made for home use, the latter type accounting for the bulk of recent output. The photograph illustrates one of the most popular sets in the home style.

Pushing a button places a steel ball in position to be released by the plunger. Rotating around the field and bounding from the various pins the ball eventually settles into one of the various numbered holes or into a trough for which no score is allowed. Seven to ten balls usually are played. To return the balls for replaying a slide located under the field is moved, permitting the balls to drop and roll back in position to be placed again before the plunger.

Since the first of the modern pin games was introduced many variations have sprung up as the result of the strong demand, although except for changes in design of the playing field the main features are unchanged. Sets are distributed much in the manner of weighing machines and chewing gum dispensers and profits from the coin operated type in some instances have been heavy.

Popularity Short-Lived?

Some of the larger manufacturers of pin games last year found it necessary to operate day and night for several months to fill orders. Like many games, however, the duration of popularity of this pastime is uncertain, although the business has exceeded the expectations of producers. A number of new types were introduced at a recent exposition and convention of coin machine manufacturers.

Steel is used principally for the balls and for the slide that permits the balls to return for replaying after they have dropped into the holes. Balls vary from ¼ to 1-inch in diameter, according to the size and type of the game, the average being around ¾-inch. While not all pin games employ steel balls about 800 tons of steel was required for making these spheres last year.

The slide is a sheet of 0.020-inch cold-rolled steel, weighing about 3 to 3½ pounds. This piece is located beneath the playing field and holds the balls that drop in the holes in place until the operator desires to release them. The slide is punched so that when it is moved forward holes correspond with those in the field and the balls are freed.

Lower-price games without a glass top frequently use aluminum castings for the rail edge. This metal also is employed for strips that guide the early progress of the ball, and for the plunger. The plunger spring is made of steel, while small strips of steel clock spring are used to deflect the ball into play. Pins usually are brass, although one manufacturer has effected a 40 per cent saving by using plated steel pins.

Fittings for the plunger and coin operating mechanism generally are made of brass. Wood is employed almost exclusively in manufacturing the case and also the stand, when the latter is required, and has resulted in a rather substantial volume of business for wood workers in those districts where the pin game industry has flourished.

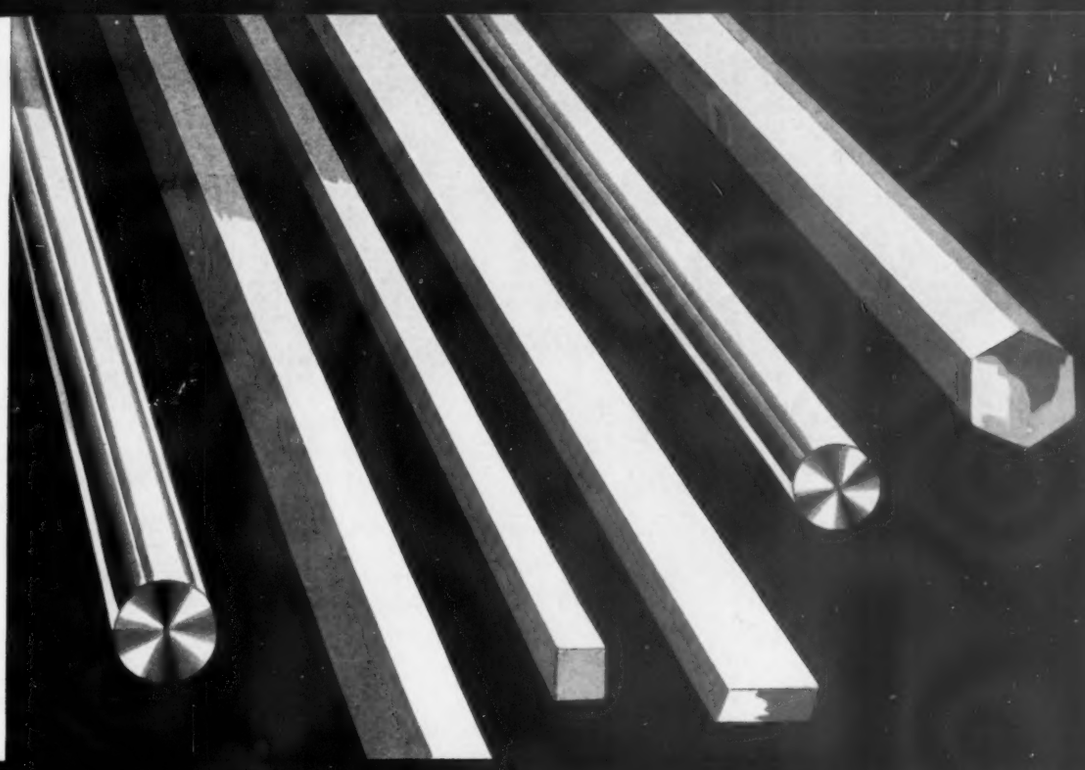
Ten Picked for Finals in Bridge Design Test

Ten students of the 134 who competed in the fifth Bridge Design competition sponsored by the American Institute of Steel Construction, New York, have been selected to submit finished drawings in the final judgment to be held May 4. Preliminary competition was judged March 21.

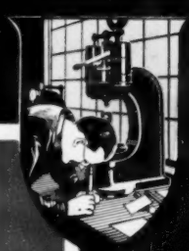
The problem was to design a steel highway bridge, crossing a deep gorge with precipitous rock walls. The main span of the bridge was to be 250 feet; clear width of roadway between curbs 24 feet with no sidewalks; and height of roadway grade to water level 160 feet. Solution of the problem permits the use of several types of bridges such as a deck arch, a deck truss or a suspension structure.

Foundry Film Produced

A motion picture showing various steps in the production of a gas engine cylinder casting, to be used in the administration of the foundry course at Purdue university, Lafayette, Ind., recently has been completed by the department of practical mechanics of the university. The film, in two parts, requires approximately 45 minutes for exhibition.



PROMPT SHIPMENT of ODD SPECIFICATIONS



VIGILANT LABORATORY CONTROL

OUR large production of special grades qualifies us to make prompt shipment of steels with limited specifications of analyses and physical properties.

The fact that many diversified users depend upon us for annealing, normalizing and other heat treatments serves to augment the already wide variety of Union Drawn Steels.

You can rely upon us not only for bars that accurately fill requirements but for good delivery. The experience of recent years has proven the unusual value of this service.

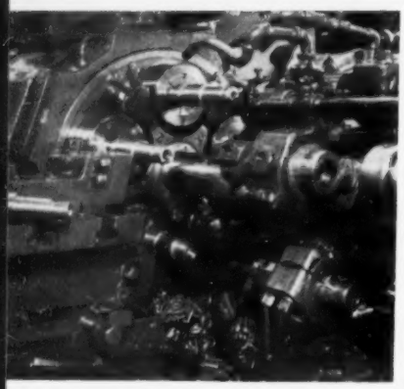
UNION DRAWN STEEL COMPANY

MASSILLON, OHIO

. . COLD DRAWING PROVIDES MAXIMUM MACHINABILITY . . .

UNION SUPERCUT

Establishes a New Basis for Machining Production



UNION SUPERCUT has increased production of parts made on automatic screw machines to such a degree that an entirely new basis for computing costs has been established. This has been proven in hundreds of cases where it has replaced S. A. E. 1112 (Bessemer screw steel).

Many comparisons of production speeds with these steels, taken from actual experience, have been published. The question has been asked "how do they compare under *average* operating conditions?"

Many factors must be considered, but in general practice S.A.E. 1112 does not average a greater speed than approximately 150 surface feet per minute. Union Supercut permits increasing this average to approximately 250 surface feet per minute. Index time being the same for both grades, the increased output due to faster speed amounts to about 50%.

However, Union Supercut also permits faster feeds of approximately 25%. Therefore, under general conditions, an average increased output of 75% will be accomplished.

Despite this rapid production, Union Supercut gives a good, smooth finish. Its physical properties compare favorably with Bessemer screw steel.

A test of Union Supercut will enable you to determine accurately what savings can be made on your production.

UNION DRAWN STEEL CO., MASSILLON, OHIO

UNION COLD DRAWN STEELS

A Graphic Comparison of Production Speeds with Union Supercut *and* S.A.E. 1112 under General Operating Conditions

IMPROVING OPEN-HEARTH FURNACE DESIGN

BY WILLIAM C. BUELL JR.

Part V—Open-Hearth Furnace Lines

(Twenty-Sixth Article of Series)

SECTIONS of ten of the 16 open-hearth furnaces under discussion were presented and details of the designs explained in the March 27 issue. Sections of furnaces K to P inclusive, are presented in the accompanying article.

Brief synopses of the history of each of the furnaces shown follow:

Furnace K: One of a seven furnace installation made in 1930, all being of similar capacity, 150 tons, but generally differing in port arrangement. The furnace illustrated is equipped with the Blair port and is regularly fired with producer gas in connection with forced draft. Waste-heat boilers are employed. Auxiliaries for firing with mixed gas are installed.

Furnace L: One of a 14-furnace installation begun in 1931. All furnaces are similar in size and design, the rating being 150 tons. The furnace is fitted with Rose-type sliding gas port and the fuel is mixed blast-furnace-coke oven gas. In this installation the mixed gas is highly preheated in regenerator chambers to produce a molecular rearrangement of certain of the gas components for the purpose of creating a luminous flame. Forced draft and waste-heat boilers are included.

Design Is Similar

Furnace M: There are two furnaces of about the same design, in a 14-furnace plant. They were originally about 70-ton furnaces but were redesigned and rebuilt in 1929 to a rated capacity of 200 tons. The furnaces have a large depth of bath, 48 inches from the foreplate line. They are fired with coke oven gas injected through the end walls. Forced draft and waste-heat boilers are included.

Furnace N: There are three furnaces of this approximate design in a 12-furnace plant, each rated at 250 tons ingot capacity. They were constructed in 1928. Blaw-Knox ports are used and the furnaces are fired with producer gas. Waste-heat boilers are installed.

Furnace O: There is one furnace of this design in a 12-furnace plant. The furnace, built in 1929, has a rated capacity of 300 tons. Blaw-Knox ports are included, the furnace is fired with producer gas and a waste-heat boiler is included. This is the second largest stationary furnace in the United States.

Furnace P: There is a single furnace of this design in a 12-furnace plant. The furnace has a rated capacity of 200 tons being rebuilt in 1927 from an older furnace of 125 tons. Originally designed for producer gas firing, it now is fired with tar and/or coke oven gas, injected through the ends.

Visual inspection of the roofs of the several furnaces of Fig. 43 indicates but two principal types of roof lines, the first being horizontal over the hearth from knuckle to knuckle, the second rapidly raising to some degree within the knuckles and then continuing horizontally over the hearth. The roofs of furnaces C, D, E, F, G and I are of the first type, all others being of the second.

The elevation above the knuckle of the second type fall within the limits 9 to 22½ inches excepting the roofs of furnaces J and P, which raise to 37½ and 30⅜ inches, respectively.

The only apparent reason for an extreme height of roof over the bath is a greater volume into which larger quantities of light scrap may be charged in a single operation. While with light scrap charging is simplified, the higher roof may react unfavorably against the best combustion lines.

Excepting the roof of furnace C,

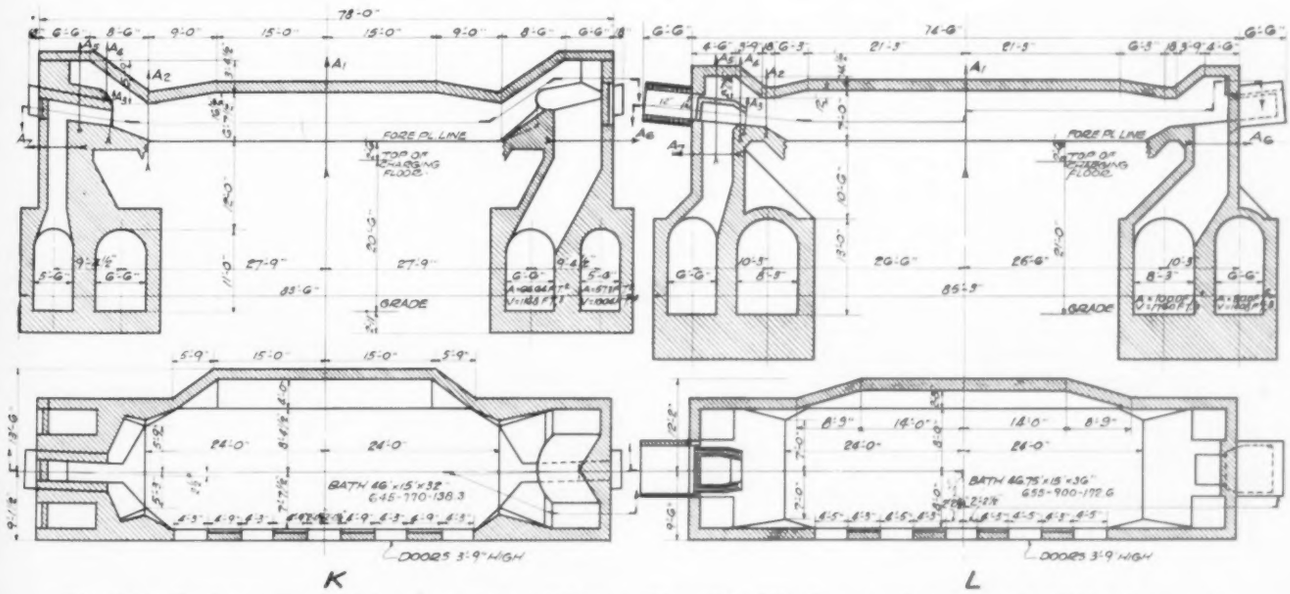


Fig. 43K—Producer gas fired furnace rated at 150 tons. Fig. 43L—Mixed gas enters through sliding-type port

Table LI

Heights of Furnace Roofs Above Foreplate Lines

Furnace	Roof Height Above Foreplate Line At c/l Hearth A_1, Ft.—In.	Knuckles A_2, Ft.—In.	Ends A_3, Ft.—In.	Elevation of roof minus elevation of knuckles $A_1 - A_2$, Inches	Elevation of ends minus elevation of knuckles $A_3 - A_2$, Ft.—In.
A	7— 3½	5— 5	10—10	22½	5— 4
B	7— 4¾	6— 7¼	8— 5¼	9½	3— 2
C	9— 0	9— 0	9— 0	Zero	Zero
D	6— 7	6— 7	9— 4	Zero	2— 9
E	7— 4½	7— 4½	8— 9	Zero	1— 4½
F	4— 0	4— 0	11— 4	Zero	4— 4
G	6— 8	6— 8	13— 1½	Zero	6— 5½
H	6— 7	5— 2½	8— 5	16½	3— 2½
I	7— 1½	7— 1½	11—10½	Zero	4— 9
J	7— 9	4— 7½	10— 7½	37½	6— 0
K	6— 7½	5— 3	11— 0	16½	5— 9
L	7— 0	6— 0	8— 7½	12	2— 7½
M	6—10½	6— 1½	9— 8	9	3— 6½
N	7— 3½	5— 5	11— 5	22½	6— 0
O	8— 1½	6— 7¾	12— 5	17¾	5— 7¼
P	6—10½	4— 4⅛	11— 9	30⅜	4—10½

all roofs slope upwards from the knuckles to the ends, both the angle of slope and the total rise varying considerably. As the angle of the roof ends may be responsible in a primary degree for the shape and direction of the developing flame it usually is found in its most extreme development in furnaces that are end fired with producer gas or side or under fired with coke oven, mixed or natural gas. In all cases the fuel is presumed to move into the furnace throat under such a low velocity head that the directional effect of the incoming fuel upon the flame is nil.

Incoming Fuel Important

The necessity of extreme roof end slopes is absent when end firing with oil, tar, coke oven, mixed or natural gases, if the fuel is "driven" into the throat with sufficient dynamic force so that the incoming fuel itself is the prime element in the flame direction control.

The relations of the height of the roofs above the foreplate line are given in Table LI. While linear dimensions representing but one dimension of the furnace cross section are of little value comparatively it is interesting to note that six of the roofs are horizontal, knuckle to knuckle, while of these roofs that raise between the knuckles all excepting the roofs of furnaces J and P rise within the range of 9 to 22½ inches, and omitting reference to furnace C, the heights of the roofs above the foreplate as shown in the first column vary from about 6 feet 7 inches to 8 feet 1½ inches, a total of only 18½ inches, or within a ratio of perhaps 1.0 to 1.23. Nominal steel capacity of the basic open-hearth furnaces varies in the ratio of 1.0 to 3.0.

By examination of Fig. 43 it may be seen that the ends of the furnaces designed for producer gas firing, A, I, J, K, N, O and P and that designed for mixed gas firing, end injection, furnace L, have steep slopes and that the angle of fuel injection is roughly one-half that of the roof angle.

The ends of the furnaces primarily designed for driven fuel, B, D, E, F, H and M, have nominal slopes and the angle of fuel injection may be and is adjusted as required.

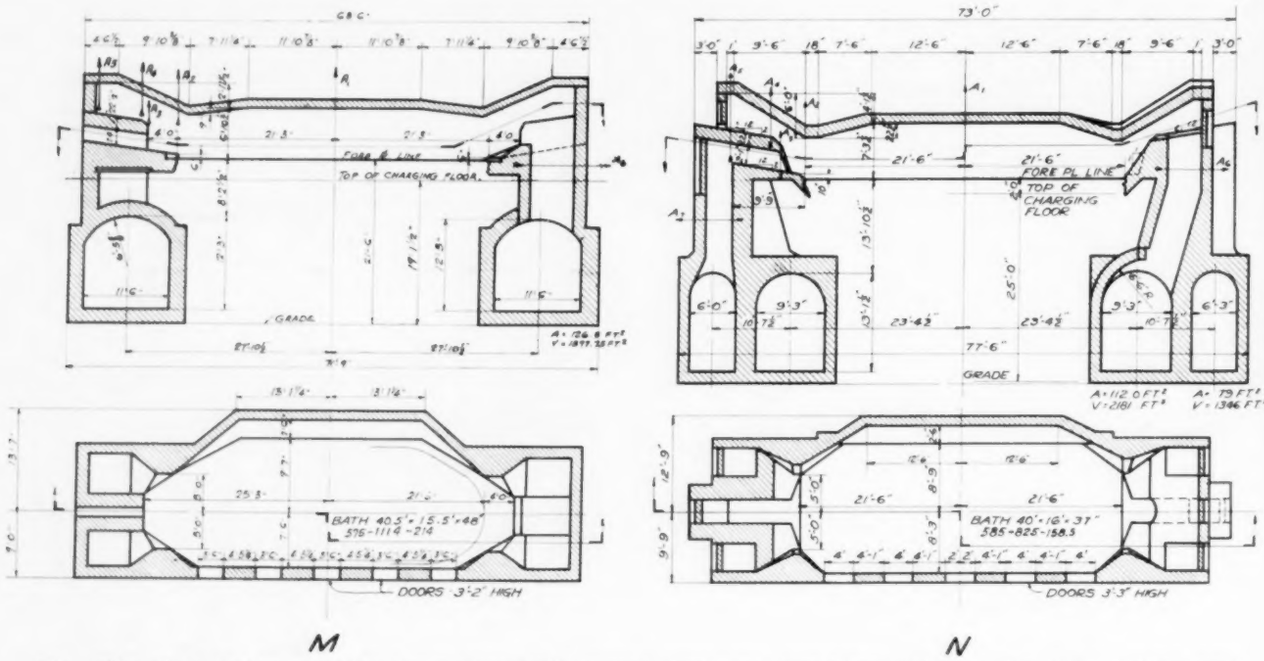
Profile Indicates Preference

Development of the roof profile probably will continue to indicate the preference and ideas of designers and operating men. Bearing in mind the simple principles involved and keeping within the limits of existing design it would seem that the roof profile as such has but little influence on operation and its contour may be about as desired.

As previously mentioned, the drawings used as a principal premise for this treatise are construction drawings. Operation of the various units may have indicated desirable changes which, perhaps, have been accomplished and therefore design details as shown may have been altered to varying degrees.

The lower views of Fig. 43 are given to indicate the salient features of the design of the various furnaces in plan. Besides giving the principal dimensions they show the general outlines of the throat, air and fuel arrangements, the spacing and size of the doors and the developed bath dimensions.

The figures of the length, width and depth of the bath are from the following references. The length



M N

Fig. 43M—This design provides for a deep bath, forced draft and waste-heat boilers. Fig. 43N—250-ton unit

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Table LII

Comparisons of Linear Ratios of Throats and Baths

Furnace	Primary fuel	Air head	Fuel head	Length of throat and bank, feet—inches: Air	Fuel	Length of bath, feet	Ratios: d	e
	a	b	c	d	e	f	d + f = g	e + f = h
A	Producer gas	Natural	Low	11— 3	6— 9	36½	0.238	0.156
B	Fuel oil	Forced	High	13— 0	8— 3	34	0.2766	0.1953
C	Fuel oil	Forced	High					
D	Coke oven gas	Natural	High	12— 4½	6— 3	41	0.232	0.1324
E	Fuel oil	Natural	High	13— 9	3— 0	39½	0.2582	0.076
F		Natural	High	14— 6	6— 6	50	0.225	0.115
G	Mixed gas	Forced	†	17— 3	11— 0	40	0.301	0.216
H	Fuel oil	Natural	High	12— 7½	6— 7½	39	0.2445	0.145
I	Fuel oil	Natural	High	18— 7½	12— 6	46	0.288	0.2215
J	Producer gas	Natural	Low	14— 0	4— 3	46	0.2334	0.0845
K	Producer gas	Forced	Low	13— 0	6— 0	46	0.2205	0.1154
L	Mixed gas	Forced	Low	12— 4½	6—10½	46¾	0.2085	0.128
M	Coke oven gas	Forced	High	12— 6	5— 0	40½	0.236	0.110
N	Producer gas	Natural	Low	12— 0	4— 9	40	0.231	0.1062
O	Producer gas	Natural	Low	11—10½	3— 7½	47	0.2081	0.0716
P	Coke oven gas	Natural	High	12— 1	5— 0	42	0.2222	0.1063

†In furnace G the fuel enters the air stream vertically from below. At the point of injection the head is considerable.

and depth are in accord with those given in Fig. 1, while that of width is from Fig. 21.

Data Are Explained

The three undesignated figures of both data are respectively the area of the surface in square feet, the volume of metal in cubic feet and the working capacity of molten steel in gross tons. The method employed in arriving at these latter figures is subsequently treated in detail.

It will be evident to all-open hearth operators that the flame does no useful work until it reaches the bath. Therefore, those parts of the furnace from the limit of the bath to the end walls at the outer surfaces of the air uptakes and comprising the linear distance occupied by the banks and the throats is actually the furnace mixing chamber in which the fuel and air are mixed as intimately as may be ignited and partially consumed. The mixing and ignition of the fuel occupies an appreciable interval of time. These factors are influenced largely by the methods in which the mixing is accomplished and also by the speeds at which the various components of combustion are introduced into and flow through the throat towards and over the bath.

Effects Cost Reduction

The great value of "short flame" firing, i.e., the accomplishment of the complete oxidation of the fuel before it reaches the far end of the bath, generally is recognized and where correctly practiced has reduced fuel and refractory costs materially and increased the number of tons of basic steel produced per time unit.

Entirely logical is the deduction that the ratio of the length of the throat, to include the bank, to that of the combined length of the throat and bath is one of the critical elements of open-hearth furnace design, inasmuch as these features have an important bearing on the length of the flame.

In Table LII in which certain data regarding the fuel used, the methods of burning it and the lengths of the throats and baths are tabulated, the three furnaces I, G and B have the largest throat length ratio in the order named and likewise have in the same order shown the best fuel and tonnage rates over extended periods of operation.

Characteristics Are Similar

Further, the four nominally rated 150-ton furnaces, I, J, K and L, all of which have baths of similar characteristics have indicated operating rates that follow the comparative length of the fuel throat. In other words, the record of furnace I is the best, followed by L, and then K and J in the order named.

The foregoing remarks may prompt the comment that the length of the bath probably is a considerable factor in these results. While under some conditions this may be so, approximate conclusions cannot be drawn where but one dimension is considered. However, if the cross sectional area over the bath, which governs the time factor of the gas flow over the length of the bath, be considered then the length may be of great importance.

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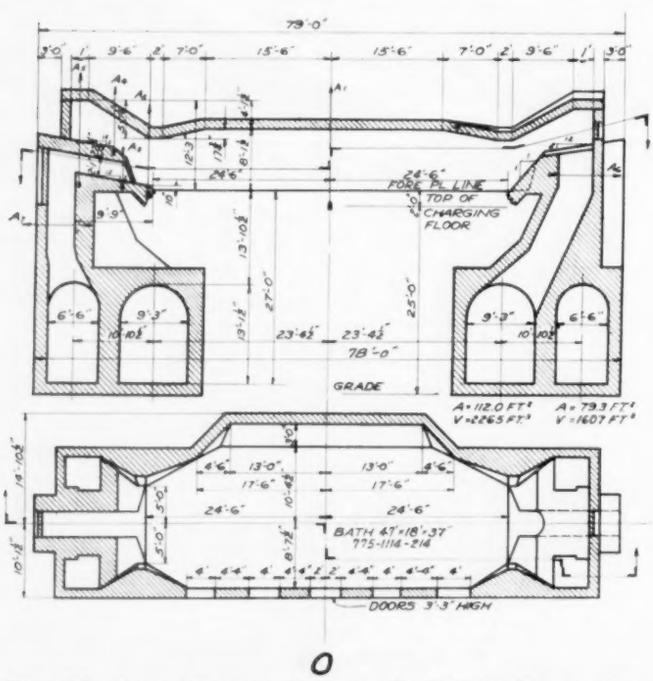

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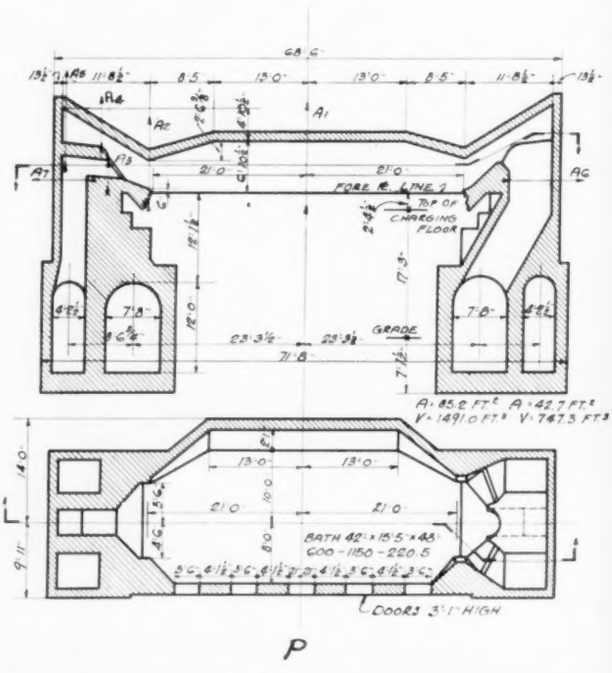
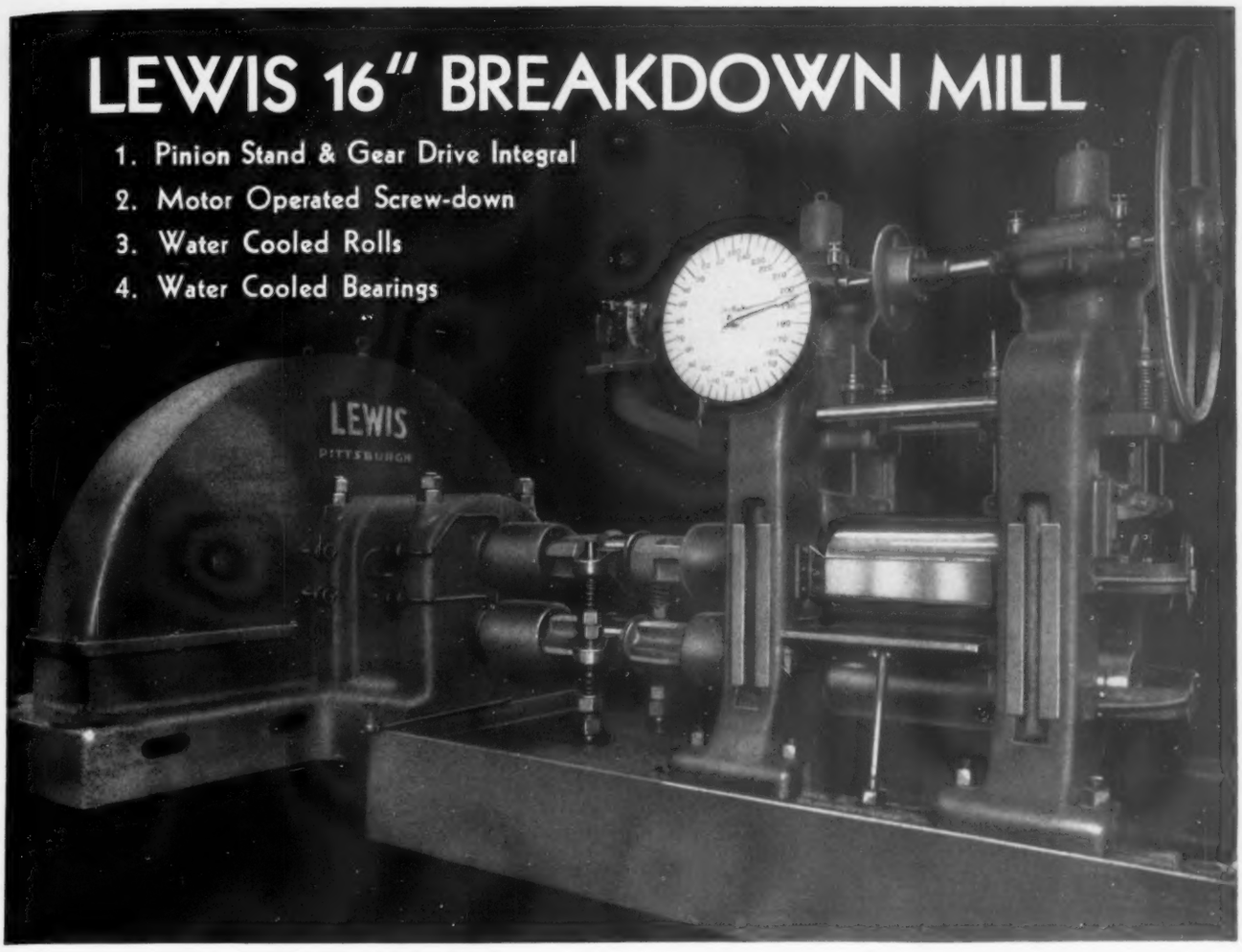


P

Fig. 43O—Second largest stationary furnace in this country. Fig. 43P—200-ton unit fired with tar or coke oven gas



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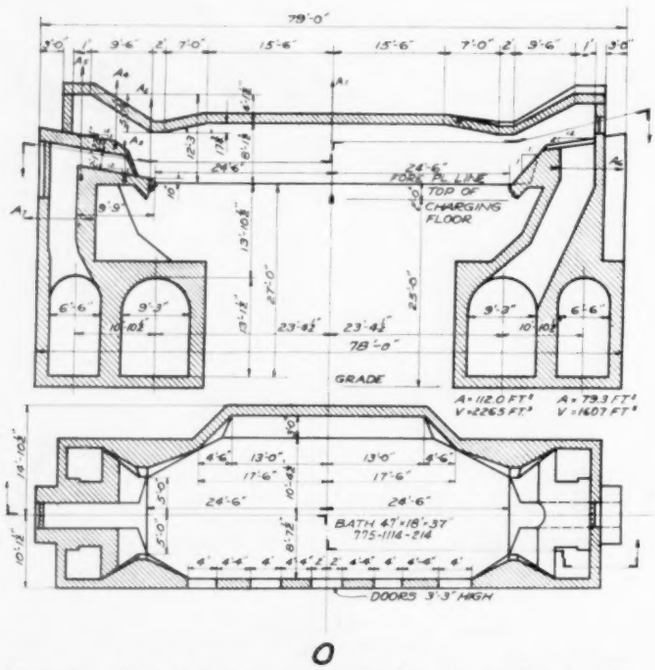

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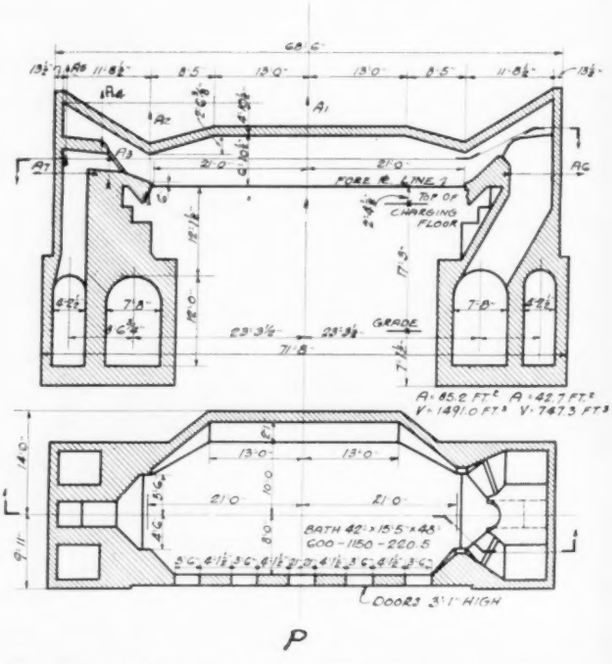

P

Fig. 43O—Second largest stationary furnace in this country. Fig. 43P—200-ton unit fired with tar or coke oven gas

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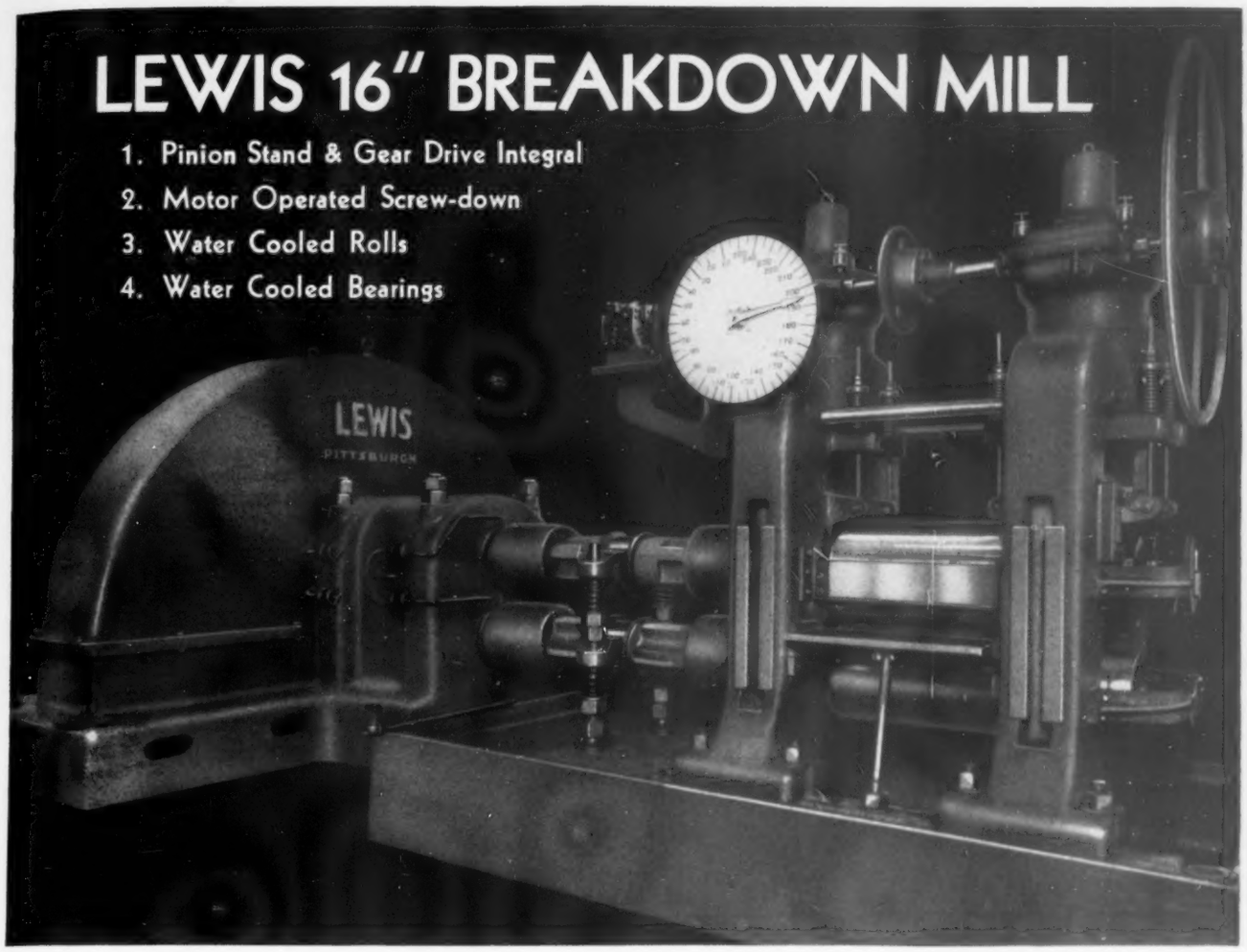

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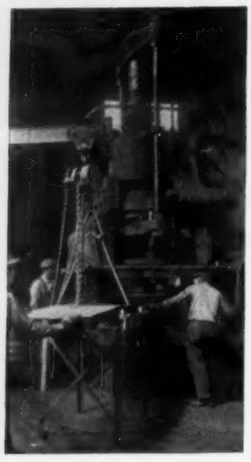
Making the Most of

METHODS AND MATERIALS



COST figures all substantiate the fact that daylight should be used when available. On the other hand, however, when adequate daylight is available for only a small portion of the day, its hourly cost is comparatively high. For example, if daylight having an annual cost of $713 is used to advantage only one hour per day 300 days per year, its hourly cost becomes $2.38. In comparison, an excellent artificial lighting system of high intensity and uniform quality, if used 7 hours per day or 2000 hours per year, would cost $2908, or $1.45 per hour.

$ $ $

Specially developed alloys have enabled the construction of a fish canning machine which will not contaminate the food products with which it comes in contact. All parts of the machine coming in immediate contact with the fish are made of a nickel cast iron which is highly resistant to corrosion. The frames and other cast parts of the machine are constructed of nickel-copper-chromium iron, another corrosion-resistant alloy.

$ $ $

BECAUSE it has been generally believed that welded parts were not safe where high impact resistance is a factor, the United States ordnance department has not permitted the use of any welded material in gun carriages. This prejudice has been broken down, however, in developing a new type of carriage. The 3-inch anti-aircraft gun mount produced at Watertown arsenal is mounted on wheels and all members are subject to severe road shocks as well as to extreme impact in firing. Although originally weighing 8 tons, this carriage was designed to travel as fast as 40 miles an hour. Steel castings had been used for the top carriage and for the outrigger arms, but X-ray inspection of these cast parts showed too high a percentage of defects. Faced with this problem, it was decided to experiment with welded plates. A high-strength nickel steel plate, much lighter than the plate of ordinary steel which would be required to carry the load, proved successful. Similarly, the same material was found useful in the pedestals. The outside outrigger member was originally constructed of cast steel ends riveted to steel plate, but engineers figured it could be made an integral unit by using welded nickel steel plate throughout. This also proved satisfactory and considerable weight saving was effected.

$ $ $

Success in drilling deep small diameter holes on a production basis depends upon the ability to get the drill chips out of the hole so as to prevent packing and binding and to enable cooling fluid to reach the drill point. As hole diameters become smaller a point is reached where the chip spaces or flutes are too small

to allow the chips to pass out of a deep hole properly. The only remedy is to lift the drill out of the hole at intervals. Devices lately have been placed on the market which, when properly attached to a drill press spindle, will perform this task automatically. Performance of drills has been improved, both as to the number of holes drilled per grind and number of grinds per drill. Inasmuch as the removal and re-insertion of the drill is automatic and extremely rapid, little drilling time is lost.

$ $ $

Chrome steel in the form of plates and shapes now is available and has been considered for railroad and industrial cars used in handling corrosive materials. Carbon steel in the form of plates is available with a thin veneered surface of corrosion-resisting steel and offers advantages for the construction of equipment handling corrosive materials. Steels containing 4 to 5 per cent chromium, 14 per cent chromium, 17 per cent chromium, and 18 per cent chromium and 8 per cent nickel, are typical analyses of commercial steels suitable for this purpose in the form of sheets, shapes and castings now on the market.

$ $ $

Aluminum knitting needles are being nickel plated by a French company to prevent corrosion of the needles.

$ $ $

ONE popular type of rowing machine on the market has a frame constructed entirely of steel rigidly welded to assure protection against failure under the most extreme abuse. The side rails are structural steel channels. A steel foot rest is welded to the front cross member; the back cross member is angle shaped for strength. After fabrication, the whole frame is cadmium plated providing a coating which will not chip under hard usage.

$ $ $

Swiss manufacturers are understood to be using chrome-nickel corrosion-resisting steel for watch cases and faces. The same type of material also has been selected for both faces and hands of a large public clock in Toronto.

$ $ $

After extensive research, nickel cast iron has been adopted for certain parts for oil burners which go into the home. It has been found that this alloy iron is required to withstand the severe service and wear to which parts of the burners are subjected.

$ $ $

Because of the larger size of the teeth of machine-cut files, as compared with milled files, material finished with the former is more strongly torn. As a result, a machine-cut second-cut or smooth file may produce a surface with unevennesses greater than those of surfaces finished with a milled bastard file.

ELIMINATE THE WEAK LINK

In refineries it may be the acid sludge lines; in the well it may be where sulphur and salt play hob with the tubing and casing; in industrial plants it may be a a process liquor line or a boiler blow-off line—but there's a place in every pipe installation where the conditions make it necessary to use only the most corrosion-resisting material that the money available can buy.

Under such conditions, eliminate the weak link by using Toncan Iron Pipe. Go further than this. Take no chances, because corrosion is ever present to some extent. Make the entire system Toncan Iron and forget corrosion troubles for a long, long time.

Toncan Iron is not a new metal. It has a metallurgical background of more than twenty-five years during which it has been proved that this alloy of refined iron, copper and molybdenum stands first in rust resistance among the ferrous metals, after the stainless alloys.

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Crystal Structures Made Plain by X-ray Method

Tables of Crystal Structure, by I. E. Knaggs, B. Karlik and C. F. Elam; cloth, 90 pages, 6 x 9¾ inches; published by Adam Hilger Ltd., 98 Kings road, Camden road, London, N. W. 1; supplied by STEEL, Cleveland; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

Those who practice X-ray methods of crystal analysis of powders and separate crystals wil find this a useful reference book. The aim has been to collect in a convenient form all the available information, hitherto scattered through the scientific journals of the world.

In each section the information is contained in the sets of tables of which the first gives the substances in alphabetical order, with their chemical formulas and index numbers in the succeeding table and bibliography, the second gives the substances in order of lattice spacing and includes remarks, while the third is a full bibliography. The bibliography to the first section presents more than 800 references and the second 126 references.

◆

British Foundry Practice Series Is Completed

Foundrywork and Metallurgy, Vol. VI; edited by R. T. Rolfe; imitation leather, 238 pages, 5 x 7 inches; published by Isaac Pitman & Sons Ltd. and supplied by STEEL, Cleveland, for $1.75 plus 15 cents postage; in Europe by the Penton Publishing Co. Ltd., Caxton House, Westminster, London.

This is the concluding volume of a series devoted to various factors pertaining to the foundry industry and deals almost entirely with cast iron. Centrifugal casting is discussed by J. E. Hurst and although devoted chiefly to cast iron, deals to some extent with other alloys which have been used in that process. The author has discussed the type of equipment used, methods of operation, tests of products and data giving results of certain tests.

The division devoted to special casting production was prepared by W. Scott and includes information on molding pits, methods of making a marine gearcase, a large hydraulic cylinder, a low-pressure turbine cylinder, a large marine engine bedplate, and a diesel locomotive cylinder block.

R. T. Rolfe and J. Laing collaborated in the third division, devoted to cast iron specifications and testing. The data represents British practice and a number of the tables are abstracted from the British Standards Institution specification No. 321 on general gray iron castings.

The concluding chapter on alloy cast iron is by the same authors. Information includes material on uses and production of nickel, nickel chrome and allied cast iron, and a survey is made of cast iron containing other alloy constituents, or those in which a constituent normally present, as silicon or manganese, is to be found in an unusually high proportion. The volume is well illustrated.

◆

British Practice Shown In Annual Handbook

Mechanical World Year Book; cloth, 158 pages, 4 x 6¼ inches; published by Emmott & Co., Ltd., Manchester, Eng.; supplied by STEEL, Cleveland; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

The forty-sixth annual publication, this volume is in form like its predecessors, but with contents revised and brought to date. A feature is a new section on internal combustion engines and one on bucket elevators. The matter relating to power transmission has been entirely rewritten. The section on pipes and tubes has been rearranged extensively.

As usual this is an excellent manual of mechanical practice as followed in Great Britain.

◆

How To Read Blueprints; Book Makes Them Clear

Blueprint Reading for the Machine Trades, by Robert H. Fortman and James McKinney; cloth, 154 pages, 5½ x 8¼ inches; published by American Technical society, Chicago; supplied by STEEL, Cleveland, for $1.50, plus 15 cents for postage; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

Since those whose duties include the the reading of blueprints seldom have the training in mechanical drawing which would give them the ability to read easily, this volume is designed to train the user of blueprints to read them correctly and produce with accuracy the parts thereon laid out.

After preliminary explanations of what constitutes a blueprint, how it is made, the relations between objects and mechanical drawings and the definitions of terms used in the machine shop the authors proceed by concrete examples to train the reader in actual interpretation of the drawings. A large variety of objects is thus illustrated. A set of examination questions is appended, with correct answers for reference to allow self-examination by the reader.

◆

Standards Developments in 1933 Given Publication

Standards Yearbook, 1933, cloth, 255 pages, 6 x 9 inches; published by department of commerce, bureau of standards; supplied by STEEL, Cleveland, for $1, plus 15 cents for postage; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

The seventh annual publication on standardization, this volume is filled with data and suggestions for those engaged in standardization. Activities and accomplishments of the year are reviewed, including those of the federal government and the states and counties. Work toward standardization by scientific and technical societies and trade associations is included.

◆

Testing Society Offers Its Proceedings in Full

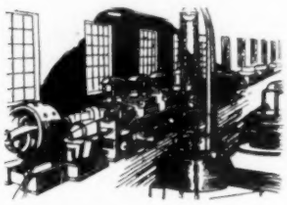
Proceedings, Thirty-fifth Annual Meeting, A. S. T. M., 1932, Part I, 1071 pages, Part II, 824 pages, 6 x 9 inches; published by American Society for Testing Materials, Philadelphia; supplied by STEEL, Cleveland, for, each part, paper, $5.50, cloth $6, half-leather $7 plus 15 cents for postage; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

The first of these volumes contains annual reports of committees and technical papers and standards appended, the annual address of the president and the annual report of the executive committee. Part II contains technical papers presented at the annual meeting and discussions thereon. In this way additional data are preserved when not presented in the various written papers.

A wide field in ferrous and nonferrous metals is covered in these papers, including a symposium on steel castings and a report of an extensive research on embrittlement of hot-galvanized structural steel.

PROGRESS IN STEELMAKING

BLAST furnace gas has been found by a steelmaker in the Pittsburgh district to be the most satisfactory fuel to use in soaking pits when ingots are charged at or above a temperature of 1500 degrees Fahr. Ingots heated with blast furnace gas show a better surface condition, have less scale and are not burned as readily as when other types of fuel are used.



TUNGSTEN carbide dies, used by a steelmaker in the Great Lakes district for drawing certain grades of wire, are showing an average life of from 375 to 400 coils which vary in weight from 325 to 500 pounds. In a few instances this type die has permitted the drawing of slightly in excess of 2000 tons of wire before its campaign was brought to a close.

♦ ♦ ♦

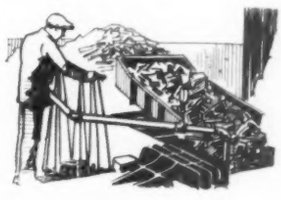
Blast furnace slag processed near a stack in the Chicago district into a light weight aggregate now is being offered for use in concrete mixtures for fireproofing and for mixing with mastic for floor construction. The molten slag is poured into an expelling machine, centrifugally operated, where it comes in direct contact with high-temperature steam. The resultant product, which resembles pumice, varies from fine sand to pieces 12 inches diameter and contains about 0.005 per cent moisture. The material discharged from the vessel is cooled, crushed and graded to size. When mixed with cement and cast the product affords a concrete weighing only 96 pounds per cubic foot. The aggregate weighs 40 pounds per cubic foot which compares with 95 to 100 pounds per cubic foot for gravel.

♦ ♦ ♦

Recent development of a ram 3 inches in diameter and 30 inches long for operation in conjunction with an electric lift truck now permits loads of coiled strip and bundles of rods and wire up to 4000 pounds to be handled.

♦ ♦ ♦

Circuit breakers employing a new principle of arc extinction and in which no oil is used, have been developed for the control of steel mill electric power circuits up to 25,000 volts. A powerful magnetic blowout is provided which transfers the arc almost instantly from the contacts to a special chamber, where the arc is moved at a high speed over metal plates and cooled quickly and extinguished. This new type breaker particularly is suited for main roll drive control where conditions frequently require inching the motor to line up couplings or remove cobbles.



THREE sets of rams are used in a new scrap baling machine recently installed at a plant in the Chicago district for compressing bulky scrap. The first compression is from the side, the second in the longitudinal direction and the third from below by means of a vertical ram which also ejects the finished bale. Only the second and third compressions are employed for baling small compact clippings. The press box is lined with high-carbon steel plates which can be renewed conveniently. Power is supplied by a hydraulic pump. Operation of the press is controlled by an air-powered poppet type valve.

♦ ♦ ♦

Protection against corrosion and heat at temperatures up to 2000 degrees Fahr. are claimed for recently introduced grade of seamless tubing containing about 30 per cent chromium.

STEEL drums of 15, 18 and 20 inches diameter now are being used by wire nail producers in Great Britain for export shipments. Upon arrival at destination the containers are emptied, filled with other products and reshipped. Wire nail containers of this type consigned to New Zealand and Australia recently were returned filled with honey, feathers and apples, the savings in packing to wiremakers amounting to approximately 15 per cent.

♦ ♦ ♦

Developments now under way in the galvanizing industry include an automatic wipe at the exit end of the wire galvanizing pot and a bright and brilliant galvanized coat.

♦ ♦ ♦

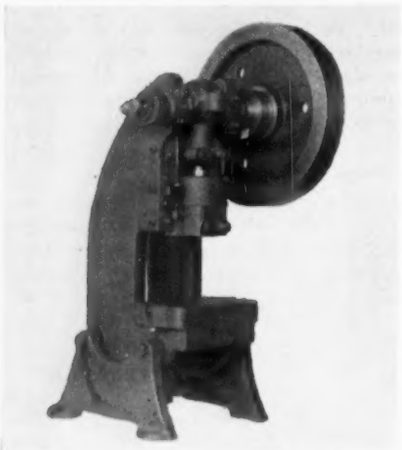
Composition bearings built up from laminated paper, treated with synthetic resin, and further processed under temperature and pressure have been in operation 1032 hours on the finishing stand of a middle west rod mill. During this campaign 18 sets of roll dressings have been worn out and 27,195 net tons of rods produced.

NEW EQUIPMENT

PRODUCTION FABRICATION TREATMENT FINISHING

New Press Available in Bench or Floor Type

Federal Press Co., Elkhart, Ind., recently added a new unit, shown herewith, to its line of open-back inclinable punch presses. A bench and a floor type are available. The bench press weighs approximately 350 pounds; with floor legs it weighs about 500 pounds. Crankshaft at the main bearings is 1 3/8 inches and at the pitman bearing 2 3/4 inches, developing a ram pressure at the bottom of the stroke of approximately 7 tons.



Safety mechanisms are incorporated in new Federal press

Standard stroke is 1¼ inches and the maximum stroke that can be furnished is 3 inches. The ram has a 3¾-inch square face and has facilities for clamping 1-inch punch shank. Die space is 6⅜ inches from the bed to the bottom of the ram with the stroke down and adjustment up.

◆

Circuit Breakers Have Oil-Filled Bushings

General Electric Co., Schenectady, N. Y., recently introduced a new line of circuit breakers rated 15, 25, and 34.5 kilovolts. These units are equipped with oil-filled bushings.

By utilizing the oil-blast principle of circuit interruption, the breakers operate in eight cycles. They are designated type FHKO-339, designed for indoor and outdoor service, and have interrupting ratings from 500,000 to 1,500,000 kilovolt-amperes.

Breakers are of the round-tank construction (one per pole). The three top domes are welded into a single supporting plate. Mechanism is entirely internal, eliminating any tendency to reclose during or after circuit interruption.

◆

Portable Belt Feeder Unloads Loose Bulk Material

Fairfield Engineering Co., Marion, O., is marketing a portable troughed belt feeder intended to facilitate unloading of loose bulk materials such as coal, coke, stone, etc. from hopper bottom cars. The unit is 18 inches wide and 14 feet long. Rubber belt is fitted with flat cleats on close centers. Replaceable wear angles fitted to the frame of the feeder hold the belt in position at the curved section of the feeder. Unloading capacity is 40 tons of coke, 60 tons of coal, or 100 tons of sand per hour.

◆

Makes Improvement in Gas Cutting Attachment

Linde Air Products Co., 30 East Forty-second street, New York, has announced an improvement in its type CW-17 gas cutting attachment whereby the heating oxygen throttle can also be used as an oxygen shut-off valve for use during temporary stops in cutting. The throttle has been redesigned and the valve packing improved to make the valve operate more easily. The cutting attachment was developed to provide a general blowpipe suitable for all kinds of work. By simply unscrewing the head of a type W-17 welding blowpipe and putting on the type CW-17 cutting attachment exactly as the welding head is screwed on, the blowpipe can be used for cutting work as well as welding. The cutting attachment is sufficiently small, compact and light to be carried around in the operator's pocket so that it will be instantly available when needed.

◆

Develops Flexible Working Roll Leveller

Sutton Engineering Co., Park building, Pittsburgh, has developed a flexible working roll leveller by means of which pressure can be applied to the center of the sheet toward both edges simultaneously; or if desired the machine can be constructed so that pressure can be applied toward one or the other edge of the sheet. A patented feature provides for the use of spacer rolls which lie underneath and between the working rolls and above and between the top train of working rolls.

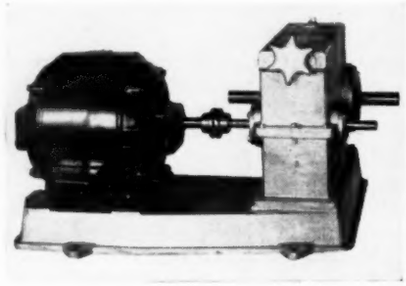
No corners of the backing-up rolls come in contact with the working rolls, as the backing-up rolls operate against the spacer rolls. Backing-up rolls extend the full length of the working rolls, permitting sheets to be levelled and the deflection controlled the full width of the machine. This unit also is provided with easy adjustment for angling the top train of rolls and is equipped with indicating gages.

◆

Speed Flexibility Features Transmission Unit

Strong, Carlisle & Hammond Co., Cleveland, recently announced that as national distributors, it now has available from stock, the Lenney variable speed transmission in sizes up to 1½ horsepower.

Complete speed flexibility is the principle feature of this unit with an input speed of 1200 revolutions per minute. Infinitely variable speeds may be obtained from 10 to 100 revolutions per minute. With an input speed of 1800, infinitely variable speeds ranging from 14 to 140 revolutions per minute may be obtained.



Variable speed unit distributed by Strong, Carlisle & Hammond Co.

The unit, shown herewith, operates by the overrunning clutch principle. Three clutches are used on the output shaft, sufficiently overlapping each other so as to give a constant speed. The unit is mechanical throughout, running in a constant bath of oil.

Ingot Rate Gains; Finishing Mills More Active

Automotive, Brewery Requirements Expected to Provide Mild Lift in April—March Iron Output Down—Rail, Construction Work Delayed

APRIL points to a moderate upturn in iron and steel demand, following the restricted conditions of March, with impetus expected mainly from the automotive industry, a quickening in seasonal requirements, and expansion in beer manufacture and distribution.

This improvement, however, is likely to develop without extensive railroad and public construction work, normally active at this period. Railroad buying is in almost complete suspension pending determination of what the Washington administration is planning for the carriers. New federal building projects await revision of the emergency construction program.

Steel ingot production in the past week was lifted 1½ points to 15½ per cent, with greater gains in finishing mill operations than indicated by this rate. Improvement in finished steel output was due largely to automotive requirements, but also in no small measure to fuller specifications on first quarter contracts, owing to the prevailing impression that any change in prices will be upward.

Preliminary estimates on March pig iron production indicate a daily average of 17,450 gross tons, compared with 19,752 tons in February. In output, March apparently did not break through the record low of last August, but the number of stacks reported active at the close of the month, 39, was two less than for August.

Chevrolet, preparing to make 35,000 cars in April, has released substantial steel orders. The Ford program contemplates 50,000 cars; some inquiries have been issued and purchasing is expected to develop this week. Sheet mills in districts tributary to Detroit have stepped up to 30 per cent.

The brewing industry is figuring more prominently in the market for steel products, ranging from strip for box hinges to structural shapes. Sheets and parts have been placed for brewery trucks. A Milwaukee fabricator is planning mass production of stainless steel barrels. Brewery structures are being figured at St. Louis, Columbus, O., and Manville, N. J.

Steel consumers manifest less apprehension regarding prices for second quarter than they did when a general inflation appeared imminent; nevertheless, they continue to cover farther ahead than has been their practice since the beginning of the depression, seeking protection in some instances through the remainder of the year. Steel pipe prices have been reduced $7 to $14 a ton, and comparable revisions have been made in electric weld line pipe.

Despite the dearth in new federal and state projects, structural steel awards for the week show a substantial gain, to 21,594 tons, including 10,500 tons for the New York federal courthouse. Action on more than 35 other federal projects, principally postoffices, on which bids were opened in the past two weeks, has been suspended.

Pig iron shipments are improving and sales continue fairly active, featured by 5000 tons of gray forge in eastern Pennsylvania, with another order for 5000 tons of foundry iron pending; prices there have advanced again, 50 cents to $1 a ton.

Scrap is quieter, though 25 cents higher at Pittsburgh and Detroit. Southern Railway is understood to be planning to scrap 15,000 freight cars and 100 locomotives, to yield 200,000 tons.

Great Lakes iron ore vessels are starting out two months earlier than last year, mainly to move stockpiles before May 1 taxes become effective.

For the third consecutive week, STEEL's scrap composite has advanced, to $6.58. The finished steel composite is off 70 cents, to $44.90; and the iron and steel composite down 23 cents, principally on reductions in line pipe.

Composite Market Averages

	April 1	March 25	One Month Ago March, 1933	Three Months Ago Jan., 1933	One Year Ago April, 1932	Ten Years Ago April, 1923
Iron and Steel Composite	$28.12	$28.35	$28.35	$28.68	$29.75	$47.01
Finished Steel Composite	44.90	45.60	45.60	46.13	47.62	63.88
Steelworks Scrap Composite	6.58	6.54	6.47	6.23	7.76	22.95

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, tin plate, nails, sheets, plates, shapes, bars, and black pipe. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate pipe. Steelworks Scrap Composite:—Melting steel, compressed sheets.

COMPARATIVE PRICES OF IRON, STEEL AND COKE

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	April 1, 1933	Mar. 1933	Jan. 1933	Apr. 1932
Pig Iron				
Bessemer, del., Pittsburgh	$15.76	15.76	15.76	16.76
Basic, valley	14.00	14.00	14.00	15.00
Basic, eastern, del. eastern Pa.	14.19	13.50	13.50	15.00
No. 2 foundry, del. Pittsburgh	15.76	15.76	15.76	16.26
No. 2 foundry, Chicago	15.50	15.50	15.50	16.00
*Southern No. 2, Birmingham	11.00	11.00	11.00	11.00
**No. 2X, Virginia furnace	17.75	17.75	17.75	18.00
**No. 2X, Eastern, del., Phila.	14.51	13.76	13.76	15.66
Malleable, valley	14.50	14.50	14.50	15.50
Malleable, Chicago	15.50	15.50	15.50	16.00
Lake Superior charcoal, del. Chi.	23.04	23.04	23.04	23.04
Gray forge, del. Pittsburgh	15.63	15.63	15.63	16.13
Ferromanganese, del. Pittsburgh	73.24	73.24	73.24	80.24

*1.75-2.25 silicon. For local delivery. Northern shipments based on $10, Birmingham. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

Coke				
Connellsville, furnace, ovens	1.75	1.75	1.75	2.25
Connellsville, foundry, ovens	2.25	2.25	2.50	3.25
Semifinished Material				
Sheet bars, open-hearth, Youngs.	26.00	26.00	26.00	26.00
Sheet bars, open-hearth, Pitts.	26.00	26.00	26.00	26.00
Billets, open-hearth, Pittsburgh	26.00	26.00	26.00	27.00
Wire rods, Pittsburgh	35.00	35.00	36.20	37.00

	April 1, 1933	Mar. 1933	Jan. 1933	Apr. 1932
Finished Material				
Steel bars, Pittsburgh	1.60	1.60	1.60	1.60
Steel bars, Chicago	1.70	1.70	1.70	1.70
Steel bars, Philadelphia	1.91	1.91	1.91	1.91
Iron bars, Chicago	1.65	1.65	1.65	1.70
Shapes, Pittsburgh	1.60	1.60	1.60	1.60
Shapes, Philadelphia	1.65	1.65	1.70	1.75
Shapes, Chicago	1.70	1.70	1.70	1.70
Tank plates, Pittsburgh	1.60	1.60	1.60	1.60
Tank plates, Philadelphia	1.54½	1.59½	1.66	1.79½
Tank plates, Chicago	1.70	1.70	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.55	1.55	1.65	1.70
Sheets, No. 24, hot ann., Pitts.	2.00	2.00	2.05	2.20
Sheets, No. 24 galvan., Pitts.	2.60	2.60	2.70	2.85
Sheets, No. 10 blue anneal., Chi.	1.70	1.70	1.85	1.85
Sheets, No. 24 hot ann., Chicago	2.15	2.15	2.25	2.35
Sheets, No. 24 galvan., Chicago	2.75	2.75	2.85	3.00
Plain wire, Pittsburgh	2.10	2.10	2.15	2.20
Wire nails, Pittsburgh	1.85	1.85	1.90	1.95
Tin plate, per base box, Pitts.	4.25	4.25	4.25	4.75
Scrap				
Heavy melting steel, Pitts.	$9.25	8.75	8.35	10.20
Heavy melting steel, eastern Pa.	6.50	6.50	6.50	7.20
Heavy melting steel, Chicago	5.25	5.25	5.25	6.55
No. 1 wrought, eastern Pa.	7.00	6.75	6.50	7.95
No. 1 wrought, Chicago	5.00	5.00	5.00	5.85
Rails for rolling, Chicago	8.25	7.85	8.05	8.90

Sheets

Automotive and General Needs Expand—Talk of Galvanized Rise Drives in Little Tonnage

SHEET PRICES, PAGE 41

Cleveland—Improvement in automotive sheet releases is anticipated for early April. Ford's production program for the month is understood to call for approximately 50,000 cars; Chevrolet's for 35,000. Specifications issued by Chevrolet during the week were mainly responsible for lifting a nearby sheet mill's operations from a standing start to 30 per cent March 31. Ford, as usual, has not disclosed tonnage requirements, but inquiries for sheets and other material are noted, and fairly good purchases are expected. Some sheets have been sold for beer delivery trucks. Demand for refrigerator and washing machine stock is showing seasonal expansion. Prices are steadier. Some important makers continue to book galvanized at 2.60c, base, Pittsburgh, despite announcement of a $2 a ton advance.

Pittsburgh—Important buyers of galvanized sheets, largely jobbers, had until March 31 to place specifications at the old price for galvanized sheets. The proposed advance of $2 a ton to 2.70c, to have come this week, is being delayed, though there may be further developments later. Contracting by small buyers for second-quarter coverage has been more in evidence. Some of these accounts are placing contracts for as little as 25 tons of sheets to be specified over second quarter. Producers, unwilling to accept this sort of business in normal times, are entering all requests for contracts.

Chicago—Sheet business expanded rather sharply, orders and operations the past week being the best so far this year. While automotive demand is more active, general buying is spotty. Sheet requirements for brewery work have been confined principally to rust-resisting steels. A. O. Smith Corp., Milwaukee, is expected to manufacture steel beer kegs shortly on a mass production basis. The stronger price tone is a factor in stimulating demand in view of small inventories of most buyers. Galvanized, to be advanced $2 to 2.80c, mills, April 5, are only moderately active.

Philadelphia—Sheet demand is aided by an inquiry for 700 tons of license tag stock for Pennsylvania, on which bids opened April 15, with the work to be done at the western Pennsylvania penitentiary. While operations last week were at a virtual standstill, a local autobody maker closed on a fair tonnage of cold-finished sheets and there has been a fair release in specifications in other directions on protections at old prices. Contracting for second quarter at the new schedules is only fair, despite the possibility that in galvanized sheets a price of 2.70c, Pittsburgh, may go into effect April 5.

St. Louis—Considerably more life is evident in inquiries for sheets for second quarter, originating from a variety of users. Requirements of container and small tank manufacturers are prominent. Galvanized is the most active grade. The building outlook is more promising.

Birmingham, Ala.—Production will improve shortly, judging from inquiries and understanding of a proposed advance in some grades.

New York—While specifications hove shown a fair increase, due to releases against first quarter contracts at old prices, the sheet market continues far from active. Even with an impending advance in galvanized sheets of $2 a ton, response of consumers has been disappointing to sellers.

Cincinnati—Sheet prices remain steady, mills resisting pressure which has developed against quotations. Contracting against future needs is light. Current demands reflect retarded automotive specifications.

CURRENT FINISHED STEEL PRICES

Delivered prices subject to freight surcharge corrected to nearest ½c. Asterisk denotes price change this week

Sheet Steel

HOT ROLLED No. 10
(24 to 48 inches wide)

Pittsburgh, base..	1.40c
Chi. dist. mills.....	1.50c
Chicago, del.	1.55c
New York, del.....	1.75c
Birm., base	1.55c
Philadelphia, del...	1.71c

BLUE ANNEALED No. 9-10

Pittsburgh, base..	1.55c
Chi. dist. mills	1.65c
Chicago, del	1.70c
Phila., del.	1.86c to 1.96c
New York, del.....	1.90c to 2.00c
St. Louis, del.	1.89c
Birm., base	1.70c
San Fran., c.i.f.....	2.32½c

HOT ROLLED ANNEALED
No. 24

Pittsburgh, base..	2.00c
Chi. dist. mills....	2.10c
Chicago, del.	2.15c
New York, del.....	2.35c
Phila., del.	2.31c
Birmingham, base	2.15c to 2.25c
St. Louis, del.	2.34c
San Fran., c.i.f.....	2.85c
Detroit, del.	2.18½c

GALVANIZED No. 24

Pittsburgh, base..	2.60c
Chi. dist. mills.....	2.70c
Chicago, del.	2.75c
Philadelphia, del..	2.91c
New York, del.....	2.95c
Birm., base	2.75c
St. Louis, del.	2.94c
San Fran., c.i.f.....	3.50c

TIN MILL BLACK No. 28

Pittsburgh, base..	2.30c
Gary, base	2.40c
St. Louis, del.	2.64c

HEAVY COLD ROLLED
No. 10

Pittsburgh, base..	1.90c
Chi. dist. mills.....	2.00c
Chicago, del.	2.05c
Philadelphia, del..	2.21c
New York, del.....	2.25c

COLD ROLLED No. 20

Pittsburgh, base..	2.30c
Do. autob. qual.	2.55c
Do. furn. qual.	2.90c
Chi. dist. mills	2.40c
Chicago, del.	2.50c
Philadelphia, del..	2.61c
New York, del.	2.65c

Corrosion, Heat Resistant Alloys

Base, Pittsburgh

18% chrome, 8% nickel sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot Strip	19c	20.5c	23c	28c
Cold Strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Steel Plates

Pittsburgh, base..	1.60c
*New York, del...	1.60c to 1.70c
*Phila., del.	1.49½ to 1.59½
Boston, del.	1.82c to 2.02c
Buffalo, del.	1.85½c
Chicago, base	1.70c
Cleveland, del.	1.78½c
Birmingham, base	1.75c
*Coatesville, base	1.40c to 1.50c
Pacific Coast, c.i.f.	2.00c
St. Louis, del.	1.94c

Structural Shapes

Pittsburgh, base..	1.60c
Philadelphia, del...	1.65c to 1.75c
New York, del.	1.77c to 1.87c
Boston, del. ....1.90½c to 2.00½c	
Chicago, base	1.70c
Cleveland, del.....	1.78½c
Lackawan., base..	1.70c
Birmingham, base	1.75c
Pacific Coast, c.i.f.	2.10c
Do., wide flange	2.20c

Bars

SOFT STEEL

Pittsburgh, base..	1.60c
Chicago, base	1.70c
Birmingham, base	1.75c
Lackawan., base..	1.70c
Pacific Coast, c.i.f.	2.00c
Cleveland, base....	1.65c
Philadelphia, del..	1.91c
New York, del.....	1.95c
Boston, del.	2.02c
Pitts., cold finish..	1.70c
Pitts., forg. qual..1.75c and	1.85c
San Fran., c.i.f.....	2.10c

RAIL STEEL

*Pitts., Buff., Chi., St. Louis	1.30c
Eastern mills	1.30c

IRON

Chicago, base	1.60c to 1.65c
New York, del.....	1.85c to 1.90c
Philadelphia, del...	1.81c to 1.86c
Pitts., refined.....	2.70c to 4.20c

REINFORCING

Billet, mill l'gths. Chi., Pitts., Buff.	1.40c
Do Cleveland..	1.45c
Do Detroit	1.60c
Chicago, rail steel	1.30c
Phila., cut lengths	1.86c

Wire Products

(Prices apply on carload lots. Mixed carloads 10 cents higher with 10% discount off extras; joint carloads 10 cents higher with no discount from extras; pool carloads 20 cents up; less carloads 30 cents up.)

F.o.b. mills, 100 lb. keg

Standard wire nails.....	$1.85
Cement coated nails	1.85
Galvanized nails	3.35

(Per pound)

Polished staples	2.55c
Galvanized fence staples..	2.80c
Barbed wire, gal.	2.35c
Annealed fence wire	2.25c
Galvanized wire	2.60c
Woven wire fencing (base column, c.l.).....	$50.00

(To Manufacturing Trade)

Plain wire, 6-9 ga.	2.10c
Spring wire	3.10c

Chicago and Anderson, Ind., $1 over Pitts.-Cleve.; Duluth and Worcester, $2 higher; Fairfield, Ala., $3 higher.

Cold-Finished Bars

Base Pitts., one size, shape, grade, shipment at one time to one destination

10,000 to 19,999 lbs.....	1.70c
20,000 to 59,999 lbs.....	1.65c
6,000 to 99,999 lbs.....	1.60c
100,000 lbs. and over....1.57½c	

Chicago, Cleveland, Buffalo 5c higher; Detroit, 20c; eastern Michigan 25c.

Tin and Terne Plate

Per 100-lb. box, Pittsburgh

Tin plate, coke base, contract..	$4.25
Do., stock	3.75
Long ternes, No. 24 unassorted	2.75c

Gary base, 10 cents higher.

Alloy Steel

Hot rolled, f.o.b. Pittsburgh, Buffalo, Chicago and Massillon, O. Base 2.45c to 2.65c. Differentials to various classes of consumers.

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	3100	0.55
2100	0.55	3200	1.35
2300	1.50	3300	3.30
2500	2.25	3400	3.20

4100 .15 to .25 Mo.	0.50
4600 .20 to .30 Mo. 1.25-1.75 Ni.	1.05
5100 .80-1.10 Cr.	0.45
5100 Cr. spring	0.20
6100 bars	1.20
6100 spring	0.95
Cr., Ni., Van.	1.50
Carbon van.	0.95
9250 (flats)	0.25
9250 (rds., sq.)	0.50

Strip, Hoops, Bands

Hot-rolled strip up to 23 15/16-in. wide, Pitts..	1.45c
Do., Chicago	1.55c
Do., del. Phila...	1.76c
Do., del. N. Y.	1.80c
Cooperage hoop, Pittsburgh	1.55c to 1.60c
Do., Chicago	1.65c to 1.70c
Cold roll. strip, Pitts., Cleve.	1.80c to 2.00c
Worcester, 3 tons or over	2.10c

Rails, Track Material

Stand. rails, mill	$40.00
Relaying rails, Pitts., 20-45 lbs.	$20.00 to 22.00
50 to 75	$16.00 to 18.00
80 to 100	$20.00 to 21.00
Light rails, 25-45, mills	$30.00
Light rails, Chi....	$32.00
Angle bars, mills..	2.55c
Spikes, R. R. mills	2.15c
Spikes, boat, b'ge, Pitts.	2.65c
Track bolts, Chi...	3.50c
Do., stand., job.	73 off list
Tie plates, Pitts.	$35.00
Tie plates, Chi.....	$35.00

Rivets, Wrought Washers

Struc., c.l., Pitts.-Cleve.	2.25c
Struc., c.l., Chi....	2.35c
7/16-in. & smaller, Pitts., Chi., Cleve. .....70, 10 and 10 off	
Washers, c.l., Pitts. dist.	6.50 to 6.75 off
* Do., Chi. dist....	7.25 to 7.00 off

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to Dec. 1, 1932, lists.

CARRIAGE BOLTS

All sizes, cut thread.....75 off	
Rolled thread ⅛ x 6 and smaller .....75 off	
Eagle list .....75 off	

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts .....75 off	
Tire bolts .....60 and 10 off	
Stove bolts, 75, 25 and 10 off in pkgs.; 86 off in bulk, 5000 or more of a size.	
Rolled thread machine bolts, ½ x 6 and smaller 75 off.	

NUTS

Semifinished .....75 off	

HEXAGON CAP SCREWS

Milled .....85-10 off	
Upset 1-in. diam., smaller ..... 85-10 off	

SQUARE HEAD SET SCREWS

Upset, 1-in., smaller 75-10-10 off	
Headless set screws.....80 off	
Upset, larger than 1-in.....80 off	

Cut Nails, Piling

Cut nails, c.l., Pitts.....	$2.50
Do., less carloads, 5 kegs or over	$2.90
Less than 5 kegs	$3.05
Steel sheet piling, Pitts...	1.90c

Pipe and Tubing

Base $200 net ton, except on standard commercial seamless boiler tubes under 2 inches and cold drawn seamless tubing.

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pittsburgh and Lorain, O., to consumers in carloads, Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago delivered, 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD
Steel

In.	Blk.	Gal.
¼ and ⅜	60½	42
½	65½	54
¾	69	59
1—3	71	62

Iron

½	28	10½
¾	33	16½
1—1¼	36	20½
2	38	21

LAP WELD
Steel

2	66	57
2½ to 6	69½	60½
7 and 8	68	58
9 and 10	67	57
11 and 12	66	56

Iron

2	26	12½
2½—3½	33	18½
4—6	35	22
7—8	34	21½
9—12	31	16½

(Please turn to next page)

RAW MATERIAL PRICES

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4, 1932. Asterisk denotes price change this week

STEEL LINE PIPE

Steel

1 to 3 butt	70
2 lap	65
10 lap	66

Iron

2½ to 6 lap	63½
8 lap	61
12 lap	58

Discounts on steel and iron pipe are net.

BOILER TUBES

Carload discounts, f.o.b. Pittsburgh

Lap Welded Steel		*Charcoal Iron*	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Quantity discounts same as for hot rolled, below. Charcoal Iron—Under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Quantity discounts are: Under 10,000 pounds, 10 points and 5 per cent; 10,000 to 24,999 pounds, 6 points and 5 per cent; 25,000 pounds to carload, 2 points and 5 and 5 per cent; carload and over, base discount and 5 and 5 per cent. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

100 ft. or 150 lbs. 40%
15,000 ft. or 22,500 lbs. 70%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

6-in. & over, Birm. $32.00-33.00
4-in. Birm. 35.00-36.00
4-in. Chicago 43.40-44.40
6 to 24-in. Chicago .. 40.40-41.40
6-in. & over, N. Y. 32.00-34.50
4-in. New York 34.50-36.50

Class A pipe $3 higher than Class B.

Stand. fitgs., Birm. base...$90.00

Six to 24-inch, fittings, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Pig Iron

Per Gross Ton

FOUNDRY, No. 2

Chicago, furnace	$15.50
Pitts., dist. fur.	15.00
Pittsburgh, del.	15.63-16.13
Valley furnace	14.50-15.00
Cleve. fur., local del.	15.00
*Philadelphia del....	14.26
Virginia furnace....	17.25
Granite City, Ill.....	16.50-17.00
Buff., fur., local del.	16.00
Buff., all-rail, Bost.	18.91-19.91
Do, Brooklyn	18.90
Do, Newark	17.28
Ala., Bir. fur., local	11.00
Ala., Nor. del., Bir.	10.00
Ala., del. Chicago....	16.01
Ala., del. St. Louis..	14.42
Ala., del. Cincinnati	13.82
Ala., Phila., dock del.	15.00-15.25
Ala., Balt., dock del.	15.00
Ala., N. Y. dock.....	15.50
Ala., Bost. dock del.	15.75-16.75
Tenn., Bir. base.....	13.00
Tenn., del. Cinci....	13.82
Montreal, del.	23.00-23.50
Toronto, del.	22.10

FOUNDRY, No. 2X

Buff., fur., local del.	16.50
Buff., all-rail, Brook.	19.40
Do, Newark	17.78
Buff., all-rail, Bost.	19.91-20.91
Virginia furnace....	17.75
*Eastern, del. Phila.	14.51

FOUNDRY, No. 1X

Buff. fur., loc. del...	17.50
*Eastern, del. Phila.	14.76

MALLEABLE

Valley furnace	14.50-15.00
Cleve. fur., loc. del...	15.00
Pittsburgh dis. fur..	15.00
Pittsburgh, del.	15.63-16.13
Chicago, furnace....	15.50
Buff., fur., loc. del.	16.50
*Eastern Pa., del.....	15.13-18.91
Granite City, fur...	16.50-17.50
Montreal, del.	24.00
Toronto, delivered..	22.60

BASIC

Pitts., dist. fur.	14.00
Pittsburgh, del.	14.63-15.13
*Eastern Pa., del.....	14.00-14.25
Buff. fur., loc. del...	15.50-16.00
Montreal, del.	23.50
Valley, furnace	14.00

BESSEMER

Valley furnace	14.50-15.00
Pittsburgh fur	15.00
Pittsburgh, del.	15.63-16.13

LOW PHOS.

Valley, fur., stand.	25.00
Phila., standard	22.76-25.79
Copper bear., E. Pa. furnace	20.50-21.50

GRAY FORGE

Valley furnace	14.00
Pitts. dist. fur.	15.00
Pittsburgh, del.	15.63-16.13

CHARCOAL

Lake Sup., del. Chi.	23.04

SILVERY

Jackson County, O., fur. 6%—$18.00; 7—$18.50; 8—$18.75; 9—$19; 10—$19.50; 11—$20; 12—$20.50; 13—$21.50; 14—$22.50; 15—$23; 16—$24; 17—$25.50.

Pittsburgh and Buffalo furnace: 7 to 10—$19; 15—$21 to $23.

BESSEMER FERROSILICON

Jackson County, O., fur., 10%—$20.50; 11—$21; 12—$21.50; 13—$22.50; 14—$23.50; 15—$24; 16—$25; 17—$26.50.

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bess.	$4.80
Mesabi bessemer....	4.65
Old range nonbess.	4.65
Mesabi nonbess.	4.50
High phosphorus....	4.40

EASTERN LOCAL ORES

Cents, unit, del. E. Pa.

Foundry and basic, 56-63%, con. (nom.)	7.50
Copper-free low phos. 58-65%.....	nom.

FOREIGN ORE

Cents per unit, f.a.s. Atlantic ports (nom.)

Foreign manganiferous ore, 45-55% iron, 6-10% man.	8.00
No. Afr. low phos...	7.00
Swedish basic, 65%	7.50- 8.00
Swedish low phos...	8.00
Spanish, No. Afr. basic, 50 to 60%..	7.00
Tungsten, spot, sn. ton unit, duty pd.	$9.65- 9.90
N. F. fdy., 55%.....	7.00
Chrome ore, 48% gross ton c.i.f.....	$15.50-16.50

Manganese Ore

(Nominal)

Prices, not including duty, cents per unit, cargo lots.

Caucasian, 52-55%..	nominal
So. African, 52%....	18 to 19 cts.
So. Afr., 49-51%....	nominal
Indian, 48-50%	nominal

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pa., Ohio, Ill., Ky., Md., Ga., Ala.....	$35.00
Missouri	32.00

Second Quality

Pa., Ohio, Ill., Ky., Md.	25.00-30.00
Missouri	26.00
Georgia, Alabama....	30.00

SILICA BRICK

Pennsylvania	$35.00
Joliet, E. Chicago....	47.00
Birmingham, Ala.....	50.00

MAGNESITE BRICK

Per Net Ton

Burned, 9 x 4½ x 2½	$61.50
Unburned, 9 x 4½ x 2½	52.00

CHROME BRICK

Per Net Ton

F.o.b. ship. point....	$42.50

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	38.00
Domes, Chewelah, Wash., base	20.90

Fluorspar

85 to 5 per cent grade

Washed gravel, f.o.b. Ill., Ky., net ton, carloads	$10.50
Washed gravel, import duty paid tide, gross ton.....	16.50

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pitts., Chi., Cleve., open-hth. & bess.	$26.00
Philadelphia	31.75
Forging, Pitts., Chi.	31.00

SHEET BARS

Pitts., Cleve., Yong.	26.00
Chicago	26.00

SLABS

Pitts., Cleve., Yong.	26.00

WIRE RODS

Pitts., Cleveland	$35.00
Chicago	36.00

SKELP

All grades, Pitts.....	1.50c-1.60c

Coke

Prices Per Net Ton

BEEHIVE OVENS

Connellsville fur.....	$1.75
Connellsville fdry...	2.25- 2.50
Connell. prem. fdry.	4.00
New River fdry.....	6.00
Wise county fdry..	4.25- 5.00
Wise county fur.....	3.50- 4.25

BY-PRODUCT FOUNDRY

Newark, N. J., del...	8.21- 8.81
Chi. ov., outside del.	7.00
Chicago, del.	7.75
New England, del...	10.00
St. Louis, del.	7.75
Birmingham, ovens	4.00
Indianapolis, del.....	7.75
Ashland, Ky., ovens, Connell., basis	4.50
Portsmouth, ovens Connell. basis	4.50
Buffalo, ovens	7.50- 8.00
Detroit, ovens	8.00
Philadelphia, del.....	8.50

Ferroalloys

(In dollars, except Ferrochrome)

Ferromanganese, 78-82% tidewater, duty pd. (con.)....	‡$68.00
del. Pitts. (con.)..	‡73.24
Spiegeleisen, 19-20%, dom. fur., spot†..	24.00
Ferrosilicon, 50%, freight all., c. l.....	74.50
Do, less carload..	82.50
Do, 75 per cent.....	120-130.00

Spot, $5 a ton higher.

Silicomang., 2½ carb.	85.00
2% carbon	90.00
1% carbon	100.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. con. del.	9.50
Do, spot del.	10.00
Ferrotungsten, stand., lb. cont.....	0.94- 1.00
Ferrovanadium, 35 to 40%, lb. cont., on analysis	2.60- 2.80
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do, under 1 ton....	9.00
Ferrophosphorus, per ton, c. l. 17-19%, Rockdale, Tenn., basis; 18%, $2 unitage..	50.00
Ferrophosphorus, electrolytic per ton c. l., 23-26% f.o.b. Anniston, Ala.; 24%, $2.75 unitage	65.00
Ferromolybdenum, stand. 50-60%, lb.	0.95
Molybdate, lb. cont.	0.80

†Carloads. Diff. to apply to quantity. ‡Spot, $7 less.

Bars

General Demand Improves but Gain Is Slight—Automotive Specifications Are Light

BAR PRICES, PAGE 41

Chicago—Bar sales and specifications increased slightly during the past week. While some additional automotive business has been received, improved buying also is appearing from miscellaneous consumers. Manufacturers of farm implements are more hopeful regarding sales prospects, but have shown little change in bar requirements. Some manufacturers of beverage equipment, particularly bottling machinery, are benefitting from the approaching legalization of beer manufacture. Consumers are less concerned regarding obtaining future price protection and second quarter contracting is rather quiet. The market is steady at 1.70c, Chicago, for soft steel bars and 1.50c for rail steel.

Pittsburgh—Merchant bar specifications were less in March than in January or February. This trend applies as well for practically all hot-rolled products. Failure of automotive specifications accounts for the decline in bar orders but the market is firmly quoted 1.60c, Pittsburgh. The inroads of "precision rounds" or "sized hot-rolled" bars, which two Ohio mills are making, have been arousing considerable interest in the trade here. Alloy bar producers report continued quiet.

Philadelphia—A slight improvement is noted in buying of commercial steel bars, with warehouses making some replacements and the coal industry ordering more heavily than in several weeks. A modestly improved tonnage is going to railroads; in fact, most miscellaneous specifications of railroads appear to be for bars. Commercial steel bars are firm at 1.60c, Pittsburgh, or 1.91c, Philadelphia, and common iron bars at 1.50c to 1.55c, Pittsburgh, or 1.81c to 1.86c, delivered.

Cleveland—Industries other than automotive are supplying most current commercial steel bar releases, whereas normally automotive manufacture takes about 60 per cent of the output here. Indicative of the size of orders, seven from as many forging companies in the week average ten tons each; few from any source exceed 50 or 60 tons. Some Detroit tonnage held up by credit difficulties early in March has not yet been released. The outlook for better automotive demand, however, is encouraging; and it is reported Ford is preparing to place some substantial orders. Bars are steady at 1.65c, base, Cleveland.

Cold-Finished Sales Show Decline in March

Cold Finished Prices, Page 41

Pittsburgh—Tonnage in cold-finished bars declined in March below that of January or February, attributed to difficulties in the Detroit district where most cold-finished bar tonnage is consumed. Machinery manufacturers fail to take material and miscellaneous buyers show no interest. The market, however, is firm at a base of 1.70c, Pittsburgh, with $1 a ton up for Chicago, Cleveland and Buffalo, Detroit 1.90c, and Eastern Michigan 1.95c. Turned and ground shafting continues quoted at five unchanged base classifications, Cumberland, Md.

Tin Plate Rate Holds at 40; Not Much for Stock

Tin Plate Prices, Page 41

Pittsburgh—At 40 per cent, the average of tin mill operations in this district is holding unchanged from a week ago. There is scarcely any feature to canmakers' specifications, although less stock is being built up by the mills and operations are representative of actual releases. The price of tin plate is holding at $4.25 per base box and tin mill black is 2.30c, Pittsburgh.

Plates

Placing of Expected Tonnage Is Delayed—Bridge and Tank Work Give Most Activity

PLATE PRICES, PAGE 41

Philadelphia—Plate buying remains spotty with prices unsettled. The usual market is 1.40c to 1.50c, Coatesville, Pa., or 1.49½c to 1.59½c, Philadelphia. Tonnages for immediate rolling continue to attract concessions in some instances. At the opening, March 27, of 100 tons of hull plates for the Philadelphia navy yard, one eastern mill quoted 1.489c on 70 tons of ¼-inch or over and another mill 1.689c on 30 tons of 3/16-inch plate, which latter demands a premium of 20 cents over the heavier plate. A differential of 25 cents which normally is observed was apparently not included in either bid. Publicker Alcohol Co., Philadelphia, awarded a plate fabrication contract to the McClintic-Marshall Corp., involving 500 tons for 12 tanks. The program of the Sun Oil Co. for tanks has not been definitely decided. Edward G. Budd Mfg. Co., this city, is low on $367,000 contract for furnishing heavy masts to the navy. Lehigh & New England, which some time ago contemplated buying 150 cement cars, may confine its needs to repairs, it is reported.

Chicago—With the largest plate consumers still placing little business, producers depend largely on miscellaneous consumers for orders. Small tonnages are being placed for brewery construction with a fair volume of such work still prospective. The temporary water line for Denver will require only 100 tons of plates instead of 4000 tons originally contemplated. Shipments of plates for the Hoover dam, for which about 45,000 tons were placed last year, have been commenced by the Illinois Steel Co.

Pittsburgh—Delay in Ohio river barge orders, mainly for the oil carrying trade, is disappointing to barge builders. Furthermore, there has been no government barge work of consequence up for bids. Tankmakers are figuring several jobs which require Reconstruction Finance Corp. approval. The 300-ton oil barge which Dravo Contracting Co. closed on a week ago with the Texas Oil Co. of New York for the east coast trade, will come out of stock. It is to be 170 x 40 x 11 feet. When the Ohio river dipper dredge CARROLLTON is sold to Cincinnati, April 21, by federal engineers, bids will include two dump scows and equipment. Plate business from other than barge or tank sources is small, with prices generally based on 1.60c, Pittsburgh.

Boston — Miscellaneous demand for plates has gained slightly, although larger consumers are specifying in limited lots. Small tank builders in some instances are fairly busy. Swampscott, Mass., is figur-

STEEL LINE PIPE

Steel

1 to 3 butt	70
2 lap	65
10 lap	66

Iron

2½ to 6 lap	63½
8 lap	61
12 lap	58

Discounts on steel and iron pipe are net.

BOILER TUBES

Carload discounts, f.o.b. Pittsburgh

Lap Welded Steel		*Charcoal Iron*	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Quantity discounts same as for hot rolled, below. Charcoal Iron—Under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES
COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Quantity discounts are: Under 10,000 pounds, 10 points and 5 per cent; 10,000 to 24,999 pounds, 6 points and 5 per cent; 25,000 pounds to carload, 2 points and 5 and 5 per cent; carload and over, base discount and 5 and 5 per cent. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

100 ft. or 150 lbs.	40%
15,000 ft. or 22,500 lbs.	70%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

6-in. & over, Birm.	$32.00-33.00
4-in. Birm.	35.00-36.00
4-in. Chicago	43.40-44.40
6 to 24-in. Chicago	40.40-41.40
6-in. & over, N. Y.	32.00-34.50
4-in. New York	34.50-36.50

Class A pipe $3 higher than Class B.

Stand. fitgs., Birm. base...$90.00

Six to 24-inch, fittings, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

RAW MATERIAL PRICES

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4, 1932. Asterisk denotes price change this week

Pig Iron

Per Gross Ton

FOUNDRY, No. 2

Chicago, furnace	$15.50
Pitts., dist. fur.	15.00
Pittsburgh, del.	15.63-16.13
Valley furnace	14.50-15.00
Cleve. fur., local del.	15.00
*Philadelphia del.	14.26
Virginia furnace	17.25
Granite City, Ill.	16.50-17.00
Buff., fur., local del.	16.00
Buff., all-rail, Bost.	18.91-19.91
Do, Brooklyn	18.90
Do, Newark	17.28
Ala., Bir. fur., local	11.00
Ala., Nor. del., Bir.	10.00
Ala., del. Chicago	16.01
Ala., del. St. Louis	14.42
Ala., del. Cincinnati	13.82
Ala., Phila., dock del.	15.00-15.25
Ala., Balt., dock del.	15.00
Ala., N. Y. dock	15.50
Ala., Bost. dock del.	15.75-16.75
Tenn., Bir. base	13.00
Tenn., del. Cinci.	13.82
Montreal, del.	23.00-23.50
Toronto, del.	22.10

FOUNDRY, No. 2X

Buff., fur., local del.	16.50
Buff., all-rail, Brook.	19.40
Do, Newark	17.78
Buff., all-rail, Bost.	19.91-20.91
Virginia furnace	17.75
*Eastern, del. Phila.	14.51

FOUNDRY, No. 1X

Buff. fur., loc. del.	17.50
*Eastern, del. Phila.	14.76

MALLEABLE

Valley furnace	14.50-15.00
Cleve. fur., loc. del.	15.00
Pittsburgh dis. fur.	15.00
Pittsburgh, del.	15.63-16.13
Chicago, furnace	15.50
Buff., fur., loc. del.	16.50
*Eastern Pa., del.	15.13-18.91
Granite City, fur.	16.50-17.50
Montreal, del.	24.00
Toronto, delivered	22.60

BASIC

Pitts., dist. fur.	14.00
Pittsburgh, del.	14.63-15.13
*Eastern Pa., del.	14.00-14.25
Buff. fur., loc. del.	15.50-16.00
Montreal, del.	23.50
Valley, furnace	14.00

BESSEMER

Valley furnace	14.50-15.00
Pittsburgh fur	15.00
Pittsburgh, del.	15.63-16.13

LOW PHOS.

Valley, fur., stand.	25.00
Phila., standard	22.76-25.79
Copper bear., E. Pa. furnace	20.50-21.50

GRAY FORGE

Valley furnace	14.00
Pitts. dist. fur.	15.00
Pittsburgh, del.	15.63-16.13

CHARCOAL

Lake Sup., del. Chi.	23.04

SILVERY

Jackson County, O., fur. 6%—$18.00; 7—$18.50; 8—$18.75; 9—$19; 10—$19.50; 11—$20; 12—$20.50; 13—$21.50; 14—$22.50; 15—$23; 16—$24; 17—$25.50.

Pittsburgh and Buffalo furnace: 7 to 10—$19; 15—$21 to $23.

BESSEMER FERROSILICON

Jackson County, O., fur., 10%—$20.50; 11—$21; 12—$21.50; 13—$22.50; 14—$23.50; 15—$24; 16—$25; 17—$26.50.

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bess.	$4.80
Mesabi bessemer	4.65
Old range nonbess.	4.65
Mesabi nonbess.	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents, unit, del. E. Pa.

Foundry and basic, 56-63%, con. (nom.)	7.50
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per unit, f.a.s. Atlantic ports (nom.)

Foreign manganiferous ore, 45-55% iron, 6-10% man.	8.00
No. Afr. low phos.	7.00
Swedish basic, 65%	7.50- 8.00
Swedish low phos.	8.00
Spanish, No. Afr. basic, 50 to 60%	7.00
Tungsten, spot, sn. ton unit, duty pd.	$9.65- 9.90
N. F. fdy., 55%	7.00
Chrome ore, 48% gross ton c.i.f.	$15.50-16.50

Manganese Ore

(Nominal)

Prices, not including duty, cents per unit, cargo lots.

Caucasian, 52-55%	nominal
So. African, 52%....	18 to 19 cts.
So. Afr., 49-51%	nominal
Indian, 48-50%	nominal

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pa., Ohio, Ill., Ky., Md., Ga., Ala.	$35.00
Missouri	32.00

Second Quality

Pa., Ohio, Ill., Ky., Md.	25.00-30.00
Missouri	26.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	$35.00
Joliet, E. Chicago	47.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

Burned, 9 x 4½ x 2½	$61.50
Unburned, 9 x 4½ x 2½	52.00

CHROME BRICK

Per Net Ton

F.o.b. ship. point	$42.50

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	38.00
Domes, Chewelah, Wash., base	20.90

Fluorspar

85 to 5 per cent grade

Washed gravel, f.o.b. Ill., Ky., net ton, carloads	$10.50
Washed gravel, import duty paid tide, gross ton	16.50

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pitts., Chi., Cleve., open-hth. & bess.	$26.00
Philadelphia	31.75
Forging, Pitts., Chi.	31.00

SHEET BARS

Pitts., Cleve., Yong.	26.00
Chicago	26.00

SLABS

Pitts., Cleve., Yong.	26.00

WIRE RODS

Pitts., Cleveland	$35.00
Chicago	36.00

SKELP

All grades, Pitts.	1.50c-1.60c

Coke

Prices Per Net Ton

BEEHIVE OVENS

Connellsville fur.	$1.75
Connellsville fdry.	2.25- 2.50
Connell. prem. fdry.	4.00
New River fdry.	6.00
Wise county fdry.	4.25- 5.00
Wise county fur.	3.50- 4.25

BY-PRODUCT FOUNDRY

Newark, N. J., del.	8.21- 8.81
Chi. ov., outside del.	7.00
Chicago, del.	7.75
New England, del.	10.00
St. Louis, del.	7.75
Birmingham, ovens	4.00
Indianapolis, del.	7.75
Ashland, Ky., ovens, Connell., basis	4.50
Portsmouth, ovens Connell. basis	4.50
Buffalo, ovens	7.50- 8.00
Detroit, ovens	8.00
Philadelphia, del.	8.50

Ferroalloys

(In dollars, except Ferrochrome)

Ferromanganese, 78-82% tidewater, duty pd. (con.)	‡$68.00
del. Pitts. (con.)	‡73.24
Spiegeleisen, 19-20%, dom. fur., spot†	24.00
Ferrosilicon, 50%, freight all., c. l.	74.50
Do, less carload	82.50
Do, 75 per cent	120-130.00
Spot, $5 a ton higher.	
Silicomang., 2½ carb.	85.00
2% carbon	90.00
1% carbon	100.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. con. del.	9.50
Do, spot del.	10.00
Ferrotungsten, stand., lb. cont.	0.94- 1.00
Ferrovanadium, 35 to 40%, lb. cont., on analysis	2.60- 2.80
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do, under 1 ton	9.00
Ferrophosphorus, per ton, c. l. 17-19%, Rockdale, Tenn., basis; 18%, $2 unitage	50.00
Ferrophosphorus, electrolytic per ton c. l. 23-26% f.o.b. Anniston, Ala.; 24%, $2.75 unitage	65.00
Ferromolybdenum, stand. 50-60%, lb.	0.95
Molybdate, lb. cont.	0.80

†Carloads. Diff. to apply to quantity. ‡Spot, $7 less.

Bars

General Demand Improves but Gain Is Slight—Automotive Specifications Are Light

BAR PRICES, PAGE 41

Chicago—Bar sales and specifications increased slightly during the past week. While some additional automotive business has been received, improved buying also is appearing from miscellaneous consumers. Manufacturers of farm implements are more hopeful regarding sales prospects, but have shown little change in bar requirements. Some manufacturers of beverage equipment, particularly bottling machinery, are benefitting from the approaching legalization of beer manufacture. Consumers are less concerned regarding obtaining future price protection and second quarter contracting is rather quiet. The market is steady at 1.70c, Chicago, for soft steel bars and 1.50c for rail steel.

Pittsburgh—Merchant bar specifications were less in March than in January or February. This trend applies as well for practically all hot-rolled products. Failure of automotive specifications accounts for the decline in bar orders but the market is firmly quoted 1.60c, Pittsburgh. The inroads of "precision rounds" or "sized hot-rolled" bars, which two Ohio mills are making, have been arousing considerable interest in the trade here. Alloy bar producers report continued quiet.

Philadelphia—A slight improvement is noted in buying of commercial steel bars, with warehouses making some replacements and the coal industry ordering more heavily than in several weeks. A modestly improved tonnage is going to railroads; in fact, most miscellaneous specifications of railroads appear to be for bars. Commercial steel bars are firm at 1.60c, Pittsburgh, or 1.91c, Philadelphia, and common iron bars at 1.50c to 1.55c, Pittsburgh, or 1.81c to 1.86c, delivered.

Cleveland—Industries other than automotive are supplying most current commercial steel bar releases, whereas normally automotive manufacture takes about 60 per cent of the output here. Indicative of the size of orders, seven from as many forging companies in the week average ten tons each; few from any source exceed 50 or 60 tons. Some Detroit tonnage held up by credit difficulties early in March has not yet been released. The outlook for better automotive demand, however, is encouraging; and it is reported Ford is preparing to place some substantial orders. Bars are steady at 1.65c, base, Cleveland.

Cold-Finished Sales Show Decline in March

Cold Finished Prices, Page 41

Pittsburgh—Tonnage in cold-finished bars declined in March below that of January or February, attributed to difficulties in the Detroit district where most cold-finished bar tonnage is consumed. Machinery manufacturers fail to take material and miscellaneous buyers show no interest. The market, however, is firm at a base of 1.70c, Pittsburgh, with $1 a ton up for Chicago, Cleveland and Buffalo, Detroit 1.90c, and Eastern Michigan 1.95c. Turned and ground shafting continues quoted at five unchanged base classifications, Cumberland, Md.

Tin Plate Rate Holds at 40; Not Much for Stock

Tin Plate Prices, Page 41

Pittsburgh—At 40 per cent, the average of tin mill operations in this district is holding unchanged from a week ago. There is scarcely any feature to canmakers' specifications, although less stock is being built up by the mills and operations are representative of actual releases. The price of tin plate is holding at $4.25 per base box and tin mill black is 2.30c, Pittsburgh.

Plates

Placing of Expected Tonnage Is Delayed—Bridge and Tank Work Give Most Activity

PLATE PRICES, PAGE 41

Philadelphia—Plate buying remains spotty with prices unsettled. The usual market is 1.40c to 1.50c, Coatesville, Pa., or 1.49½c to 1.59½c, Philadelphia. Tonnages for immediate rolling continue to attract concessions in some instances. At the opening, March 27, of 100 tons of hull plates for the Philadelphia navy yard, one eastern mill quoted 1.489c on 70 tons of ¼-inch or over and another mill 1.689c on 30 tons of 3/16-inch plate, which latter demands a premium of 20 cents over the heavier plate. A differential of 25 cents which normally is observed was apparently not included in either bid. Publicker Alcohol Co., Philadelphia, awarded a plate fabrication contract to the McClintic-Marshall Corp., involving 500 tons for 12 tanks. The program of the Sun Oil Co. for tanks has not been definitely decided. Edward G. Budd Mfg. Co., this city, is low on $367,000 contract for furnishing heavy masts to the navy. Lehigh & New England, which some time ago contemplated buying 150 cement cars, may confine its needs to repairs, it is reported.

Chicago—With the largest plate consumers still placing little business, producers depend largely on miscellaneous consumers for orders. Small tonnages are being placed for brewery construction with a fair volume of such work still prospective. The temporary water line for Denver will require only 100 tons of plates instead of 4000 tons originally contemplated. Shipments of plates for the Hoover dam, for which about 45,000 tons were placed last year, have been commenced by the Illinois Steel Co.

Pittsburgh—Delay in Ohio river barge orders, mainly for the oil carrying trade, is disappointing to barge builders. Furthermore, there has been no government barge work of consequence up for bids. Tankmakers are figuring several jobs which require Reconstruction Finance Corp. approval. The 300-ton oil barge which Dravo Contracting Co. closed on a week ago with the Texas Oil Co. of New York for the east coast trade, will come out of stock. It is to be 170 x 40 x 11 feet. When the Ohio river dipper dredge CARROLLTON is sold to Cincinnati, April 21, by federal engineers, bids will include two dump scows and equipment. Plate business from other than barge or tank sources is small, with prices generally based on 1.60c, Pittsburgh.

Boston — Miscellaneous demand for plates has gained slightly, although larger consumers are specifying in limited lots. Small tank builders in some instances are fairly busy. Swampscott, Mass., is figur-

ing a standpipe. Some gain is noted in shipyard repairs. Electric Boat Co., Groton, Conn., has a contract for boilers for the navy at $20,229. Prices on most business are unchanged at 1.50c to 1.60c, Coatesville, Pa.

New York—Plate buying still is well under the rate prevailing in February.

Cleveland—Small orders for miscellaneous manufacturing purposes, including safes, hoppers and boilers, were placed during the week. Fabricators on brewery equipment have made some purchases, but despite their estimates of requirements, they appear to be moving cautiously until they are able to gage the volume of beer consumption. Surveys made by some of these fabricators who have figured on a possible $10,000,000 worth of brewery tank work have disclosed that much of the equipment used by breweries prior to prohibition was dismantled for shipment to Canada, Mexico and Cuba. Plates hold at 1.60c, base, Pittsburgh.

St. Louis—Brewery work is appearing in the plate market. Falstaff Corp. has an inquiry out for 36 tanks, requiring 150 tons of plates and another St. Louis brewery is inquiring for 100 tons of tank plates.

Contracts Placed

1100 tons, Denver water pipe line, to Stearns-Roger Mfg. Co., Denver; specifications revised, previously reported 2600 tons.

500 tons, 12 tanks, for the Publicker Alcohol Co., Philadelphia, to McClintic-Marshall Corp., Bethlehem, Pa.

250 tons, standpipe for Seattle water department, to Puget Sound Machinery Depot, Seattle.

Contracts Pending

250 tons, for tanks at breweries in St. Louis; 150 Falstaff Corp.; 100 tons unnamed concern.

100 tons, navy, Mare Island, Calif., John T. Hill, Baltimore, low; bids March 28.

100 tons, hull plates, Philadelphia navy yard, one eastern mill low on 70 tons, with another low on the remainder. Bids an additional 30 tons of hull plates for this yard will be opened April 3.

100 tons, standpipe, Swampscott, Mass.; bids in.

Unstated tonnage, one steel flat deck scow, 93 feet long, superintendent of lighthouses, Buffalo.

Unstated tonnage, steel smokestack, District of Columbia government building, Buena Vista, Md.; Pittsburgh-Des Moines Steel Co., Pittsburgh, low, $2777, alternate $750 additional for wrought iron.

Unstated tonnage, steel water tank and tower, veterans' hospital, Roanoke, Va.; bids April 18.

Pyle National Co., Chicago, has established a branch plant on St. Remi street, Montreal, Que.

Railroads

Roads Await Government Action—Track Fastening Releases Come Out—Rail Mills Idle

TRACK MATERIAL PRICES, PAGE 41

Until provisions of the bill now being prepared by the administration at Washington for railroad rehabilitation are known little buying by the carriers is to be expected. Meanwhile some releases are being received by Chicago mills for track accessories. Rail specifications there are insufficient to schedule a rolling. Edgar Thomson rail mill of the Carnegie Steel Co. at Pittsburgh is accumulating a backlog and plans a rolling about April 15. Routine releases on finished steel are received but in small quantities. Spikes continue 2.15c, mill, and tie plates $35 per ton, mill.

New York reports some fair orders for wheel and axle, but other buying is light.

Wheeling Steel Corp., Wheeling, W. Va., has bought from the Koppel Industrial Car & Equipment Co., Koppal, Pa., a motor-driven flat car for plant transfer of materials.

Nova Scotian interests have asked Premier Bennett of Canada to aid in placing an order for 50,000 tons of steel rails with the Sydney, N. S., mill. The plan is for the government to finance the labor cost and the Dominion Steel & Coal Corp. Ltd. to use its raw materials and await payment for its share until the rails are placed with railroads. The total involved is about $2,500,000, half labor and half material cost. The premier promised assistance.

Rail Orders Placed

United States engineers, 180 tons relaying for Sand Point jetty project, Columbia river, Oregon, to unnamed interests; Liesch & Toft, Marshfield, Oreg., general contractors.

Car Orders Pending

Navy, five 30-ton capacity steel flat cars with wooden floors and three steel box cars, wooden floors, same capacity, for Lualualei and West Lock, Hawaii; bids April 18.

Wire Orders Show Gain; Prices Are Steady

Wire Prices, Page 41

Pittsburgh—Orders gained from the middle of last week for plain wire, nails and other wire products. Most of this improvement seemed to originate in the Midwest. Prices are unchanged and nails are quoted at $1.85 a keg in carload lots, with plain wire and rods steady. Part of the 1200 tons of steel which left by barge from the Pittsburgh Steel Co. plant last week for Pacific coast destination was made up of nails and wire for San Francisco.

Chicago—Wire shipments declined slightly during March despite moderate improvement during the latter part of the month. Second quarter contracting has been only moderately active and prices are steady at $1.95 for carload lots of wire nails and 2.15c for plain wire. Wire mill operations hold at 20 to 25 per cent.

Philadelphia—Wire specifications against contracts were fairly good as the quarter ended. New tonnage is expected to be affected temporarily until recent specifications have been absorbed. This expectation, however, is offered by some trade interests with qualifications in view of possible advances in price later. The Allentown, Pa., plant of the American Steel & Wire Co., is reported to be resuming partial operation after a suspension of more than a year.

Worcester, Mass.—Plain wire is steady at 2.20c, Worcester. Buying improves gradually. Jobber demand is slightly better and some specialties are more active. Contracting for second quarter has been light.

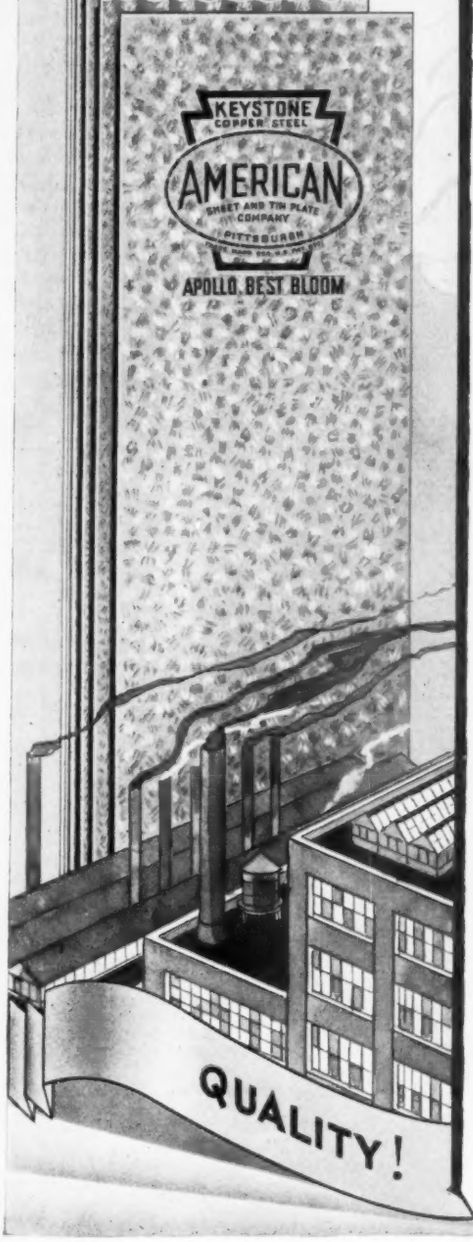
Cleveland — Specifications increased moderately during the week as consumers took shipments due them on first quarter contracts. Where tonnage is carried over contracts are to be revised at generally higher price levels. Extras on certain special grades of wire are being adjusted.

Semifinished Steel Specifications Light

Semifinished Prices, Page 42

Routine contracts for sheet bars, billets and slabs are being carried over for the second quarter, with moderate releases. Billets are moving the slowest. The market generally is without change at $26 base, Pittsburgh, Youngstown, O., and Cleveland for sheet bars, billets, and slabs; and $31 for forging billets.

AMERICAN
BLACK AND GALVANIZED
STEEL SHEETS



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SUPPLIED in Black and Galvanized Sheets, Special Sheets, Formed Roofing and Siding Products, Tin and Terne Plates.

KEYSTONE Copper Steel gives maximum rust resistance—a fact proved by time and weather.

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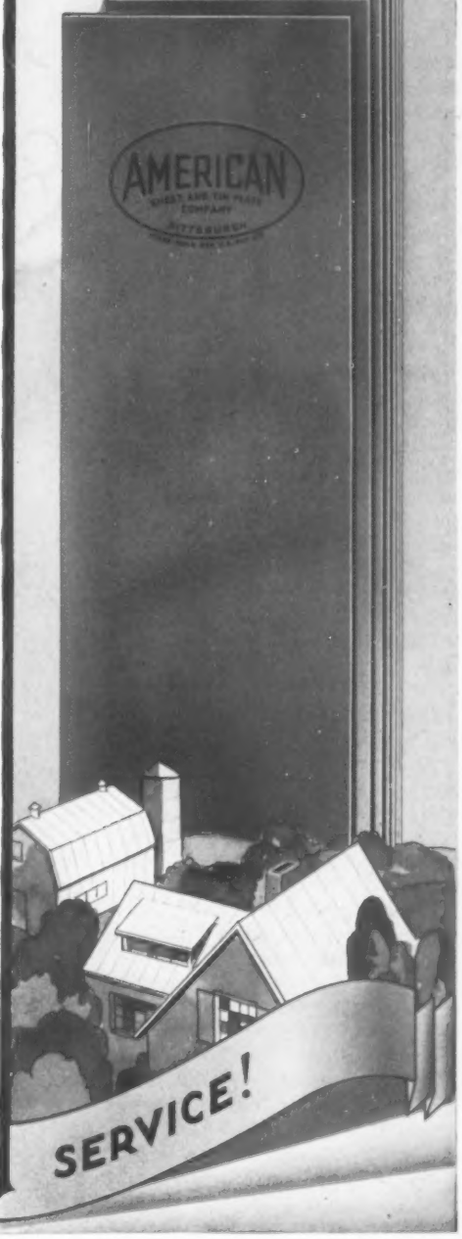


U S STEEL

American Sheet and Tin Plate Company

GENERAL OFFICES: Frick Building, PITTSBURGH, PA.

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

KEYSTONE COPPER STEEL AMERICAN SHEET AND TIN PLATE COMPANY

AMERICAN BRIDGE COMPANY
AMERICAN SHEET AND TIN PLATE COMPANY
AMERICAN STEEL & WIRE COMPANY
CARNEGIE STEEL COMPANY

PRINCIPAL SUBSIDIARY MANUFACTURING COMPANIES:
COLUMBIA STEEL COMPANY
CYCLONE FENCE COMPANY
FEDERAL SHIPBUILDING AND DRY DOCK COMPANY
ILLINOIS STEEL COMPANY
NATIONAL TUBE COMPANY

OIL WELL SUPPLY COMPANY
THE LORAIN STEEL COMPANY
TENNESSEE COAL, IRON & R.R. COMPANY
UNIVERSAL ATLAS CEMENT COMPANY

Pacific Coast Distributors—Columbia Steel Company, San Francisco, Calif.
Export Distributors—United States Steel Products Company, New York, N. Y.

Structural Shapes

Awards Are Increased, with 10,500 Tons for New York Federal Courthouse — Action on 35 New Government Projects Is Suspended — Eastern Market Firmer

STRUCTURAL SHAPE PRICES, PAGE 41

New York—Structural lettings are led by 10,500 tons for the New York federal courthouse. Fabricators are taking a firmer stand on fabricated structural steel, and plain material holds at 1.60c, Pittsburgh.

Suspension of further federal contracts for buildings and roads, other than essential maintenance, affects over 35 projects, principally postoffices on which bids were opened recently. The Great Eastern Brewing Co., Manville, New Jersey, contemplates construction of a $1,000,000 brewery. A carload of 12-inch channels, imported, was sold to a local fabricator at 1.125c, delivered.

Pittsburgh—Wheeling Structural Steel Co., Martins Ferry, O., will fabricate the 2830-ton Columbus, O., postoffice which it closed on last week with a Chicago contractor, contrary to reports that the American Bridge Co. had received the contract. Estimates range up to 3000 tons for a state bridge at Parkers Landing, Pa. Plain material is firm at 1.60c, Pittsburgh.

Chicago—The 6500-ton federal building for St. Louis on which bids close April 4 is the largest active project before fabricators in this district. Other inquiries are headed by 2000 tons for Missouri bridges. Awards include several Century of Progress structures.

Philadelphia — While architects have considerable miscellaneous work ready for bids, the business outlook apparently has not become sufficiently clarified for much active figuring. Specifications will be out in about a month for pier sheds for the Pennsylvania railroad at Baltimore, requiring 5000 tons, as recently noted.

Boston—Structural steel demand is light. Bids are in on 325 tons for the Cambridge, Mass., postoffice. Plain material is steady at 1.60c, Pittsburgh.

Cleveland—Until federal and state budgets are determined, shape fabricators do not expect to see much gain in structural work. In Ohio no state projects have developed since the first of the year. For the Columbus, O., postoffice, 2830 tons have been awarded Wheeling Structural Steel Co., Wheeling, W. Va. A small tonnage is being figured for a Columbus brewery. Industrial and other building activities here call for occasional small lots. Plain material is steady at 1.60c, base, Pittsburgh.

Contracts Placed

10,500 tons, superstructure, federal courthouse, New York, to McClintic-Marshall Corp., Bethlehem, Pa.; through James Stewart & Co.

2830 tons, postoffice, Columbus, O., to Wheeling Structural Steel Co., Martins Ferry, O., through Henry Erikson, Chicago, general contractor; 65 per cent of tonnage plain material and remainder special sections.

1000 tons, rebuilding viaduct, St. George Ferry, Staten Island, N. Y., to Phoenix Bridge Co., Phoenixville, Pa.; Edward Kloberg Inc., New York, general contractor.

900 tons, viaduct, route 29, section 10B, Newark, N. J., to McClintic-Marshall Corp., Bethlehem, Pa.; P. T. Cox & Co., New York, general contractor.

800 tons, bridge, Milford, N. J., to McClintic-Marshall Corp., Bethlehem, Pa.

575 tons, bridge, Wayne county, Missouri, to Stupp Bros. Bridge & Iron Co., St. Louis.

550 tons, East Pearl river bridge, Rigolets-Pearlington highway, St. Tammany parish, La., to Wisconsin Bridge & Iron Co., Milwaukee.

480 tons, bridge, Amory, Miss.; 275 tons I-beams to Pigeon-Thomas Iron Co., Memphis, Tenn.; 205 tons for cantilever span, to Virginia Bridge & Iron Co., Birmingham, Ala.; W. C. Howton Contracting Co., Birmingham, general contractor.

475 tons, state highway bridge, Platte county, Missouri, to Des Moines Steel Co., Des Moines, Iowa.

450 tons, Denver & Rio Grande Western railroad, Dotsero cut-off, Colorado, to American Bridge Co., Pittsburgh.

300 tons, infirmary building, state hospital, Willard, N. Y., to Shippers' Car Line Inc., Milton, Pa.; A. E. Stephens Co., Springfield, Mass., contractor.

Shape Awards Compared

	Tons
Week ended April 1	21,594
Week ended March 25	9,465
Week ended March 18	6,135
This week in 1932	9,535
Average weekly, 1932	14,285
Average weekly, 1933	10,350
Average weekly, Feb.	12,320
Total to date, 1932	179,756
Total to date, 1933	144,911

248 tons, balloon hangar, naval air station, Sunnyvale, Calif., to Moore Drydock Co., Oakland, Calif.; Dinwiddie Construction Co., San Francisco, general contractor.

225 tons, Polish building, Century of Progress, Chicago, to McClintic-Marshall Corp., Bethlehem, Pa.

205 tons, warehouse, Emporium store, San Francisco, to Judson-Pacific Co., San Francisco.

200 tons, bridge, Sumner county, Kansas, to the St. Joseph Structural Steel Co., St. Joseph, Mo.

200 tons, postoffice, Columbus, Ga., to Decatur Iron & Steel Co., Decatur, Ill.

175 tons, sheet piling, United States harbor project, Nome, Alaska, to Pacific Coast Steel Corp., Seattle.

170 tons, postoffice, Visalia, Calif., to Golden Gate Iron Works, San Francisco; Murch Bros. Construction Co., St. Louis, general contractor.

160 tons, Emma French department store, Los Angeles, to Minneapolis-Moline Power Implement Co., Minneapolis.

160 tons, bridge, New Berlin, N. Y., to Lackawanna Steel Construction Corp., Buffalo.

150 tons, public works repairs, New York, to McClintic-Marshall Corp., Bethlehem, Pa.

150 tons, air show for Curtis Lighting institute, Century of Progress, Chicago, to Gage Structural Steel Co., Chicago.

140 tons, highway bridge, Gentry county, Missouri, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

125 tons, 200-foot span, Jefferson river, Montana, for Mammoth Mines Corp., Twin Bridges, Mont., to Isaacson Iron Works, Seattle.

125 tons, sugar house, Corn Products Refining Co., Argo, Ill., to Gage Structural Steel Co., Chicago.

101 tons, dormitory, Gregory S. Bryant hall, Harvard university, Cambridge, Mass.; 85 tons of shapes to New England Structural Co., Everett, Mass.; 16 tons of concrete bars to Concrete Steel Co., Boston; Sawyer Construction Co., Boston, contractor.

100 tons, building, Century of Progress, Chicago, for Indian Refining Co., to Hansell-Elcock Co., Chicago.

100 tons, state highway bridge, Utica, Mo., to Kansas City Structural Steel Co., Kansas City, Mo.

Contracts Pending

5000 tons, piers, Pennsylvania railroad, Baltimore, previously noted as contemplated; specifications out in about a month.

2000 tons, highway bridges, Missouri.

1300 tons, state bridge, route 61, St. Louis-Jefferson counties, Missouri; bids soon.

500 tons, cranes, San Francisco-Oakland bridge.

325 tons, postoffice, Cambridge, Mass.; Joseph S. Greenwood Inc., Boston, low on alternate No. 1, $323,000; Landis & Young, Monroe, La., low on alternate No. 2, $272,761; bids March 28.

275 tons, chemistry building, Howard university, Washington.

225 tons, bridge, Dismal Swamp canal, Deep Creek, Va., and South Mills, N. C.; Tidewater Construction Co., Gloucester Point, Va., low; bids March 22, United States engineer, Norfolk, Va.

150 tons, Goshen Junction subway, San Joaquin, Calif., for Southern Pacific railroad.

125 tons, postoffice, Ventura, Calif., North Moller Co., Jackson, Mich., low, brick; Murch Bros. Construction

Co., St. Louis, low terra cotta; bids March 24.
120 tons, deck reconstruction, Charles street bridge, Baltimore; bids April 5.
101 tons, steel sluice gates, dam, United States engineer, Milwaukee; Lemke Construction Co., Kankauna, Wis., low.
Unstated tonnage, two 210-foot radio towers, Big Moose Island, Me.; McClintic-Marshall Corp., low $8207.
Unstated tonnage, $250,000 steel and concrete addition to brewery, Falstaff Corp., St. Louis.

Mirrors of Motordom

(*Concluded from page* 15)

est of Studebaker in it is only that of a stockholder.

Alcohol for blending with gasoline as motor fuel is causing as much controversy as alcohol for human consumption, but apparently getting nowhere. Iowa and South Dakota legislatures have turned down bills requiring a certain alcohol content in gasoline, while the recent "lame duck" session of congress permitted a similar measure to die in committee. Experiments continue, however.

Specifically, advocates of farm relief contend that corn can be profitably turned into alcohol. Iowa State college estimates that alcohol from 60-cent corn will cost 26 cents a gallon, the proposed mixture being 10 per cent ethyl alcohol at 26 cents a gallon, 5 per cent butyl alcohol at 70 cents a gallon and 85 per cent gasoline at 5½ cents a gallon, or a wholesale cost of 10.8 cents a gallon for this blend.

The oil and gasoline industry is fighting such proposals, claiming that the blend would result in no saving to the automobile owner, a special adjustment of the carburetor would be required unless the identical blend were used consistently, and the deposit of gum, clogging the carburetor and filter screens, would be promoted. On the other hand, a tractor company says it has been using an alcohol blend with marked success. This much seems certain—at this time gasoline appears intrenched.

More than alcohol, taxes are a menace to gasoline. The higher the tax the greater the decline in motor fuel consumption and car registrations. For 11 months of 1932 the American Petroleum institute notes the following trend, the very direct effect upon the steel and other supply industries being obvious:

Amount of state tax	Percentages of decline in Motor fuel cons.	New car regis.	New and used car regis.
7c (2 states)	14.5	47.4	14.3
6c (6 states)	11.2	44.5	13.1
5c (8 states)	8.9	46.0	2.0
4c (17 states)	9.1	43.0	6.9
3c (12 states)	4.9	42.0	5.5
2c (3 states)	3.5	39.7	3.6

Concrete Bars

Fairly Good Tonnages Are Placed in Some Districts, Though Total Is Lower—March Billet Bar Specifications at Pittsburgh Are Largest in Four Months

REINFORCING BAR PRICES, PAGE 41

New York—New inquiry for concrete reinforcing bars is light. For one section of a Newark, N. J., viaduct 1050 tons have been awarded, with 650 tons additional about to be let. Prices on billet steel bars continue weak, with 1.40c, Pittsburgh, and less, noted on mill lengths.

Pittsburgh—Three thousand tons for three bridges for the Virginia Bridge Corp., Richmond, Va., are active for bids April 10 and 11. A 1200-ton sewer project at Louisville, Ky., is being figured by reinforcing bar interests here. New billet steel specifications in March probably were the best in four or five months. New billet steel in carload lots is based on 1.40c, Pittsburgh, for mill lengths, and 1.55c for cut lengths. The price of rail steel bars holds at 1.30c, Pittsburgh.

Chicago—Concrete bar inquiry is slow to improve, new projects and orders being light. Awarding of a substantial tonnage anticipated for Indiana road work is expected to be deferred. Few private projects are appearing. Prices are provided little test.

Philadelphia—The market is dull. Until the legislatures in Pennsylvania and New Jersey have settled upon their unemployment relief programs, road and bridge work is expected to be held up. The 1.55c, Pittsburgh price on billet steel bars, cut lengths in carlots, remains nominal.

Cleveland—Practically nothing has developed from this state's road work since Jan. 1, and other projects in this district are taking little material. Billet steel bars, mill lengths, are easier at 1.35c, to 1.40c, base mill.

Contracts Placed

1050 tons, viaduct, route 29, section 10B, Newark, N. J., to Kalman Steel Corp., Bethlehem, Pa.; reported last week as 710 tons.
650 tons, viaduct over Pennsylvania railroad yards, route 21, section 1, Newark, N. J., to Truscon Steel Co., Youngstown, O.
250 tons, Sand Point jetty project, Columbia river, Oreg., to unnamed interests; Liesch & Toft, Marshfield, Oreg., general contractors.
150 tons, state bridge, Amory, Monroe county, Mississippi, to Gulf States Steel Co., Birmingham, Ala.; W. C. Howton, Contracting Co., Birmingham, Ala., general contractor.
140 tons, convalescent building 7, veterans' administration hospital, Coatesville, Pa., to Sweet's Steel Co., Williamsport, Pa.; Ralph S. Herzog, Philadelphia, general contractor.
112 tons, 14,000 square feet of metal fabric, balloon hangar, naval air station, Sunnyvale, Calif., to W. S. Wetenhall, San Francisco; Dinwiddie Construction Co., San Francisco, general contractor.
100 tons, bars and shapes, Collins & Aiken, Philadelphia, to Kalman Steel Corp., Bethlehem, Pa.
100 tons, Second street bridge over San Gabriel river, Los Angeles, to Los Angeles Iron & Steel Co.

Contracts Pending

3000 tons, bridges for Virginia Bridge Corp., Richmond, Va.; 250 tons bid March 31; 2000 tons to be bid April 10, and 750 tons April 11.
1200 tons, sewer, Louisville, Ky.; bids March 31.
250 tons, mesh, parking space, Jones Beach, Long Island, N. Y., contract 3, bids April 13. First of several contracts in development taking large tonnage of concrete bars.
165 tons, state bridge, route 61, St. Louis-Jefferson counties, Missouri; bids soon.
120 tons, Pottstown Water Co., Pottstown, Pa.; early award likely through F. H. Kaiser & Co., general contractors, that city.

Concrete Awards Compared

	Tons
Week ended April 1	1,842
Week ended March 25	3,050
Week ended March 18	2,508
This week, 1932	3,502
Average weekly, 1932	3,920
Average weekly, 1933	3,478
Average weekly, Feb.	3,539
Total to date, 1932	64,949
Total to date, 1933	48,704

G. E. Cash Is Large

General Electric Co., Schenectady, N. Y., in its report for 1932 shows that sales billed totaled $147,162,291, compared with $263,275,255 in 1931. The manufacturing plant has been further written down from $46,061,019 to $44,789,520. Current assets on Dec. 31 were $179,888,465, of which $118,608,017 was cash and marketable securities.

Pipe

Steel Pipe Prices Reduced $7 to $14 a Ton—St. Louis Is Buying 3800 Tons of Cast

PIPE PRICES, PAGE 42

Pittsburgh—Effective March 29, standard pipe was reduced, to a discount of 71 off the $200 base price for base sizes. In general this is a reduction of $7 a ton from the former 67½-off discount for base prices, but on some sizes the reduction runs up to $14 a ton. Revision in discounts on other than base sizes also has been adopted, and discounts have been increased on steel line pipe. Discounts on lap-weld steel boiler tubes or commercial boiler tubes, either hot or cold-drawn, and on cold-drawn seamless tubing, are unchanged. Makers have under consideration a possible change in the discounts for lap and butt-weld wrought iron pipe.

Discounts on electric weld line pipe have been revised in accordance with those on standard pipe.

Chicago—A few more inquiries for cast iron pipe are appearing, headed by 3800 tons for St. Louis, on which bids close April 10. Springfield, Ill., has placed 150 tons, with a larger amount to be placed later. A number of projects for which federal aid is expected have yet to approach an active status.

Philadelphia — Steel pipe mills have reduced their discounts, new cards effective March 29. Approximately 200 tons of steel pipe, ranging 14 to 18 inches in diameter, is being figured for steam mains in Washington.

Boston—Cast pipe buying has gained with more seasonal activity on the part of cities and towns. Recent awards include more than 1000 tons, exclusive of 1200 tons for Boston.

New York—Cast pipe is more active. A New Jersey utility is inquiring for 150 tons in addition to 375 tons on which bids went in last week. Yonkers, N. Y., is buying close to 1000 tons. A project under consideration in Westchester county, Pelham and Tuckahoe, N. Y., would take close to 5000 tons. Prices are unchanged at close to $30, eastern foundry.

Cast Pipe Placed

900 tons, 16 to 30-inch, Yonkers, N. Y., to Donaldson Iron Works, Emaus, Pa.

375 tons, 6 to 12-inch, Milton, Mass., to Warren Foundry & Pipe Co., Everett, Mass.

300 tons, 6 to 12-inch, Newton, Mass., to R. D. Wood & Co., Florence, N. J.

250 tons, 6 to 8-inch, state hospital, Orangeburg, N. Y., to Donaldson Iron Works, Emaus, Pa.

175 tons, Swampscott, Mass., to Donaldson Iron Works, Emaus, Pa.

150 tons, various sizes, Springfield, Ill., to Glamorgan Pipe & Foundry Co., Lynchburg, Va.

136 tons, 8-inch class 200, Burbank, Calif., to Itamco Pipe Corp., Los Angeles.

100 tons, lighthouse bureau, New Orleans, to American Cast Iron Pipe Co., Birmingham, Ala.

100 tons, or more, Portland, Me., water district, to R. D. Wood & Co., Florence, N. J.

100 tons, 6-inch class B, Santa Monica, Calif., to Crane Co., Los Angeles.

Unstated tonnage, central heating plant, Washington to Donaldson Iron Works, Emaus, Pa.; Rust Engineering Co., Pittsburgh, general contractor.

Unstated tonnage, 8670 feet, 10 to 20-inch, corrugated copper-bearing iron culvert pipe, Sussex county, New Jersey, to Loder & Sharp, Philadelphia, $5317.60, delivered.

Cast Pipe Pending

3800 tons, St. Louis; bids April 10.

2675 tons, 6 to 16-inch, Montrose, N. Y.; R. D. Wood & Co., Florence, N. J., low.

460 tons, 12-inch, Hartford, Conn. bids in.

300 tons, 14-inch, water line, Hobart, Okla.; Sherman Machine & Iron Works, Oklahoma City, low.

295 tons, 8-inch and under, Illmo, Mo.; bids in. Also 75,000-gallon elliptical bottomed steel tank and 110-foot tower.

245 tons, 6 and 8-inch, Montgomery Water Corp., Elliston, Va.

175 tons, 6 and 8-inch, Appleton, Wis.; bids in.

160 tons, 6 and 8-inch, Yonkers, N. Y.

150 tons, 12 and 16-inch, Waltham, Mass.

150 tons, water system, Mt. Carmel, Ill.

150 tons, 8 and 16-inch, Public Service Electric & Gas Co., Newark, N. J. This in addition to 375 tons, 4 and 6-inch, on which bids are in.

140 tons, 10-inch, Mount Vernon, N. Y., bids in.

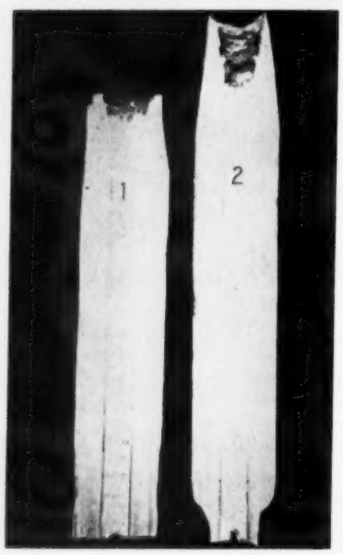
Unstated tonnage, 12 miles of 10-inch; 14 miles of 8-inch and 20 miles of 6-inch, and possibly 20 miles of 4-inch, natural gas line, Public Service Corp. of Tennessee, J. A. Creech, Sunbright, Tenn.

Unstated tonnage, six miles of 4, 6 and 8-inch, Hartland, Wis.; R. F. C. has loaned $40,000.

Steel Pipe Pending

Unstated tonnage, 5200 steel boiler tubes, navy, Mare Island, Calif.; Michigan Seamless Tube Co., South Lyon, Mich., low, delivered and f.o.b. works.

Let LIQUITOL Reduce YOUR INGOT COSTS



(1) Is treated with LIQUITOL A SPECIAL, the fluid metal is only poured to half of the head. The formation of the hole is such that the ingot is quite solid. The savings in 16 of these ingots is 1 ingot. This is only used for refined steel, that is to say, tool steel, cutting steel, and special steels of high quality.

LIQUITOL retards Cooling of hot-top metal.

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LIQUITOL is recommended in production of alloy steel, as it is guaranteed not to contaminate metal.

LIQUITOL prevents bridging of hot-top metal, allowing a natural feed of metal down the hot-top sides.

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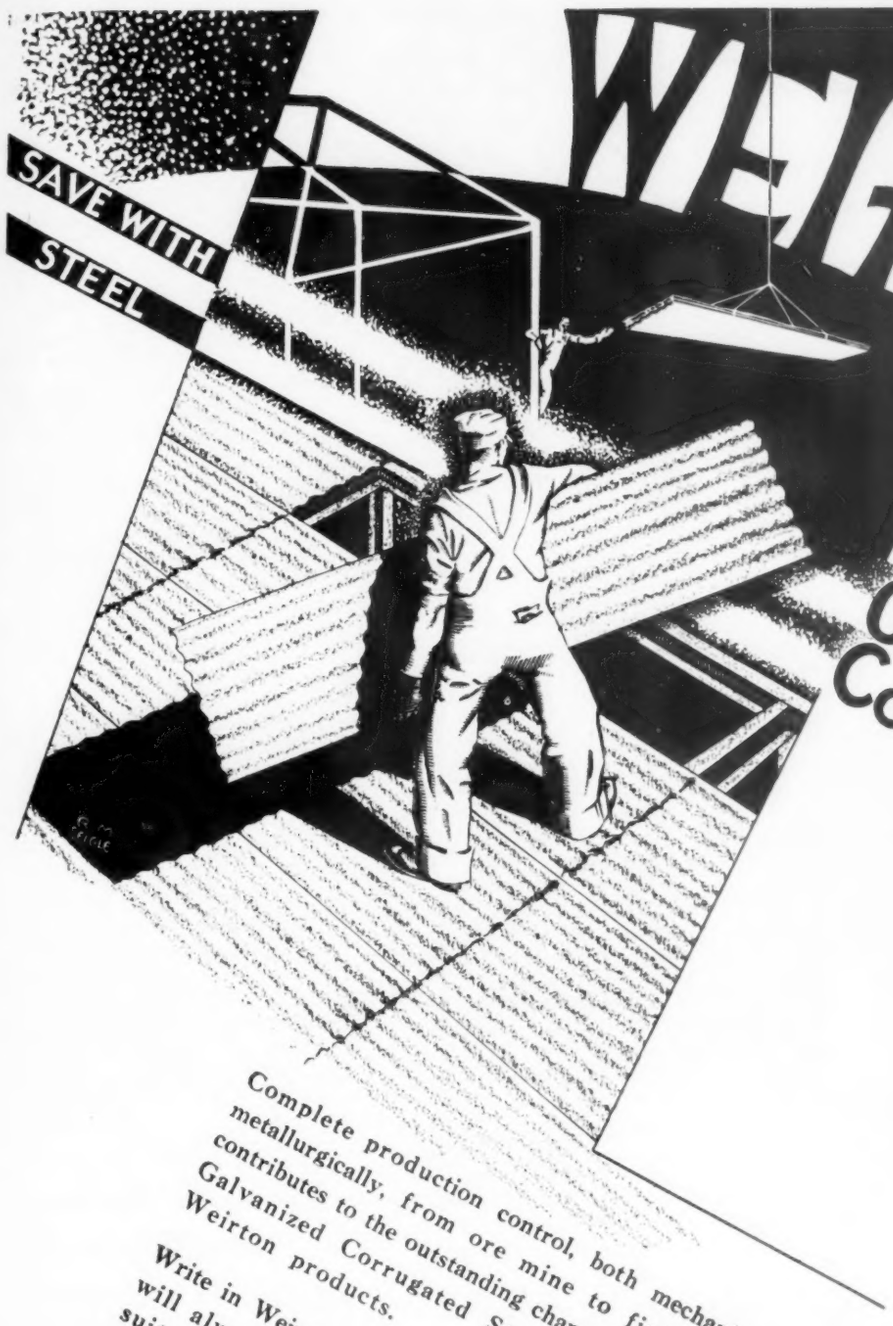

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Strip

Inquiry and Buying Light but Prices Hold Well—Seasonal Refrigerator Needs Come Out

STRIP PRICES, PAGE 41

Cleveland—Refrigerator manufacturers getting into seasonal production have released some fairly good orders for strip. Chevrolet has issued some specifications, and prospects for other automotive business for April appear brighter. Recent inquiries for stainless steel from brewery interests have resulted in a few moderate size orders. Cold-rolled strip currently is 1.80c to 2.00c, base, Cleveland, and hot-rolled 1.45c, base, Pittsburgh. Some makers of cold-rolled are firm at 2.00c for second quarter coverage.

Pittsburgh—Strip mill operation in this district declined last week with neither of the two independent mills operating. Hot-rolled is firm at 1.45c, Pittsburgh, but cold-rolled is easy at 1.80c to 2.00c. Current orders show no trend and the past week has been the slowest in one mill's experience. Cooperage hoops and bands continue to be inquired for and one inquiry covered strip steel for hinges for wooden beer cases.

Philadelphia—Strip business continues to lag with the market on hot-rolled fairly steady at 1.45c, Pittsburgh, or 1.76c, delivered, Philadelphia, and on cold-rolled unsettled at 1.90c, Pittsburgh, or 2.21c, Philadelphia.

Chicago—Strip specifications show a small gain, operations of hot mills during the past week increasing to 10 to 15 per cent. Cold strip production is slightly higher. Automotive business is improving, but still is light. A fair number of second quarter contracts have been received and the market is fairly firm at 1.55c for hot strip and 1.90c to 2.00c, Pittsburgh Cleveland, for cold strip.

Boston—Cold-rolled strip is steady at 2.10c, Worcester, Mass., with buying in small lots.

New York—With prices unchanged from last quarter, strip specifications over the past fortnight have shown little fluctuation. Some spot business in cold-rolled strip is still being booked at 1.80c, Pittsburgh, although 1.90c appears to be the ruling figure, and some producers have fixed this as their minimum.

Pittsburgh, Cleveland and Chicago Lift Steel Rate

Chicago — Ingot production increased 1 point the past week, to about 13 per cent, while blast furnace schedules were unchanged with 5 of 36 steelworks stacks active. Finishing mill operations tended upward, headed by sheets, which averaged around 30 per cent.

Pittsburgh—Steelmaking capacity was up one-half point last week to 13 per cent. Operations of two leading interests average 13, with rates in smaller independent plants unchanged also within a point of this average. This week the ingot rate will probably not better 13 per cent as orders coming through now show little improvement. Eight out of 53 steelworks blast furnaces continue active, four being Carnegie stacks and four independents'.

Philadelphia—Eastern steelmaking operations continue around 11 per cent, although schedules now being tentatively considered point to an increase next week ranging from 1 to 2 per cent.

Buffalo—For the fourth consecutive week Buffalo district steelworks continue to operate at 14 per cent. Five open hearths are on. Until navigation opens, there is little prospect of any major change in operations. It will be at least two weeks before the first lake steamers will operate at this port.

Cleveland—Steel ingot production here for the week ended April 1 was at 32 per cent, up three points from the preceding week. The Otis Steel Co. lighted one more open hearth, operating five. Corrigan, McKinney Steel Co. and American Steel & Wire Co. continued with three each. Further improvement this week is a possibility, as in one instance where production has been held down stocks have been drawn upon freely and are now becoming low.

Birmingham, Ala.—Steelmaking operations have eased from 15 per cent to 12½. Improved demand for sheets may restore the reduction this week.

Most Bolt, Nut Buying Is by Automotive Users

Bolt, Nut, Rivet Prices, Page 41

Best business in bolts, nuts and rivets appears to have come to makers in Cleveland. Releases were received in good quantity from Chevrolet, Pontiac, Ford and Fisher and Briggs body plants. New York Central and Chesapeake & Ohio released several carloads of track spikes. At Chicago farm implement manufacturers are specifying only small lots, automobile builders are taking little and jobber orders are light. March shows a slight increase over February. Pittsburgh makers find March total is under that of February, with the final week bringing fewer orders than the week preceding, which was the best of the month. Second quarter contracts are being received in good volume at unchanged prices, 75 off for bolts and nuts, 2.25c, Pittsburgh for large rivets and 70, 10 and 10 off for small rivets.

Operating Rate of the Steel Industry, by Weeks

All figures except the monthly open-hearth and bessemer ingot totals of American Iron and Steel institute are percentages. Estimates are based upon weekly reports from the Pittsburgh, Chicago, Youngstown, eastern Pennsylvania, Cleveland, Birmingham, Ala., and Buffalo districts, which are weighted. Weeks end Saturday.

1932	1st Week	2nd Week	3rd Week	4th Week	5th Week	Steel's Average	Institute's Monthly Total tons	Institute's Monthly Average
Jan.....	22	25	26	27	28.5	25.7	1,459,450	25.9
Feb.....	28.5	27	25	25	....	26.4	1,457,710	26.9
March....	25	25.5	24.5	23	....	24.5	1,409,054	24.1
April.....	23	22	22	23	24	22.8	1,238,250	22.0
May.....	24	24	25.5	23	....	24.1	1,106,030	19.7
June.....	21	17	17	17	....	18.0	897,275	15.9
July.....	14.5	12	15.5	16.5	16.5	15.0	792,533	14.6
Aug.....	14.5	14.5	15.5	14.5	....	14.7	832,402	14.2
Sept.....	13.5	15.5	15	17	....	15.3	975,061	17.3
Oct.....	18	19	19.5	19.5	19.5	19.1	1,068,550	19.0
Nov.....	21	21	19	17.5	....	19.6	1,014,794	18.0
Dec.....	16	15	14	12	13	14.0	844,618	15.0
1933								
Jan.....	15.5	17	18	19	....	17.4	1,006,297	17.7
Feb.....	19	19	19	17	....	18.5	1,065,080	20.39
March....	15	13.5	15	14	15.5	14.6	.....	....

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Pig Iron

Eastern Pennsylvania Up 50c To $1—Shipments Gain at Chicago—Advance Covering Fair

PIG IRON PRICES, PAGE 42

Philadelphia—Sales of foundry iron for nearby and second quarter delivery have been by domestic sellers at advances of 50 cents to $1 a ton. Eastern Pennsylvania foundry iron is now $13.50, base furnace, with silicon differentials 25 cents. While these differentials compare with 50 cents formerly, the latter for some time had been largely nominal. Basic iron has been established at $13.25, eastern Pennsylvania furnace, or around $14 to $14.25, delivered, compared with $13.50, delivered, previously. The basic price, however, continues largely nominal. Malleable has been advanced to $14. base furnace. Principal import grades are unchanged, although an early advance is likely. Sales are featured by more than 5000 tons of gray forge for an eastern Pennsylvania consumer. Another eastern Pennsylvania melter continues to inquire for 5000 tons of foundry iron for delivery over an extended period. General interest continues to broaden.

Pittsburgh—Two radiator manufacturers will shortly resume on a 5 day basis, but probably will melt from stock. Intention to inquire for basic pig iron has been dropped by one of the steel foundries in this district. The Trafford City, Pa., division of the Westinghouse Electric & Mfg. Co. is operating on a better melting schedule, but most foundries remain closed. No merchant furnaces in this district or in the Mahoning valley are operating, although the banked Neville Island stack may resume within a month. Under such a thin market, where carload lots of iron represent the extent of present releases, prices are nominal.

Chicago—Pig iron demand is holding well, while occasional gains continue to be noted in shipments. March business was the heaviest in many months, due to anticipation by consumers of second quarter requirements. While foundry operations have recovered only part of the decrease sustained during early March, additional improvement is looked for this month. Prices have steadied under the support of recent buying, and the $15.50 market for No. 2 foundry and malleable generally is observed.

Cleveland—Sales have dropped, following several weeks of substantial buying by some of the larger consumers, volume in the past week not exceeding 2000 tons. However, inquiries for small lots have picked up. March shipments by furnace interests here were 75 to 85 per cent of the February tonnage, but shipments now are improving. Stove foundries are taking considerable material. Not much gain has been noted so far in automotive requirements. The Cleveland market is quiet, with the price nominal at $15, base, furnace, for local delivery.

Boston—Inquiry for pig iron has gained momentum at firmer prices. Some consumers are covering for second quarter; others are interested in second half. Two textile machinery builders are inquiring for 500 tons each. A Springfield, Mass., foundry is taking figures on 200 tons. Domestic prices are firmer, notably eastern Pennsylvaia. Indian is firmer and sellers of Dutch iron also are reported asking slightly higher prices. Two lots of Dutch iron arrived March 25, consigned to W. H. Mueller.

New York—Advance in eastern Pennsylvania prices is stimulating sentiment in the local pig iron market, although no changes have been announced. Trading has not shown any perceptible pickup over a week ago, foundry operations continuing light. Until more business is in sight for these principal consumers, little change in buying is expected.

Buffalo—A fair amount of second quarter business has been placed with local producers, but individual tonnages are smaller than usual. Inquiries ranging up to 200 tons are reported. The district price situation continues firm, eastern quotations improving. Shipments are somewhat larger than during the bank holiday period but are still far below normal.

St. Louis—A fair volume of small orders for pig iron for second quarter is reported and inquiry is broader, but large demand has not appeared. Principal stove plants are expected to go in operation about April 15. Foundries which closed with the banks are resuming slowly. Southern makers' shipments are heavier.

Cincinnati—An increase in quotations on northern iron is expected shortly. Even though this would

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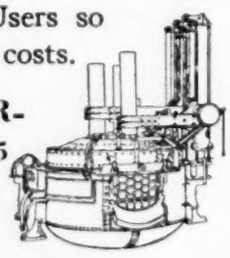

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not affect quotations in adjoining districts, it would likely be coincident with stronger prices in those districts for outside delivery, from which interests here have had severe competition. Orders the past week were for a total of 700 tons, including a 100-ton lot of southern which disclosed a firm price of $10, base, Birmingham.

Birmingham, Ala.—Sales of pig iron aggregate more than the production of the one stack on foundry and another stack on basic iron. There are occasional sales of 100 tons or more in the East. The market is steady at $10 for northern delivery and $11 for local delivery.

Toronto, Ont.—With plants associated with the iron and steel industry curtailing operations, merchant pig iron sales are tapering off. Awards are now holding around 300 tons a week, with no future business appearing. Furnaces are carrying big stock piles and giving good delivery.

Coke

Demand Off, but Higher Iron Activity a Harbinger

Coke Prices, Page 42

Excepting St. Louis, where deliveries of metallurgical coke have improved, and at Chicago, where demand is stationary, the coke market generally is working into an easier period. Producers, however, are encouraged by the increased activity in the pig iron market which usually foreruns a similar condition in coke.

Some beehive furnace coke continues to move at $1.75 in the Pittsburgh district, but less has been done; beehive foundry has not been sold recently to test the $2.25 to $2.50 range. Foundry coke will be unchanged at Chicago during the second quarter at $7, ovens, for outside delivery, and $7.75, delivered Chicago. Prices are unchanged in the East and at Birmingham, St. Louis and Cincinnati.

Iron Ore Moving; Vessels To Start This Month

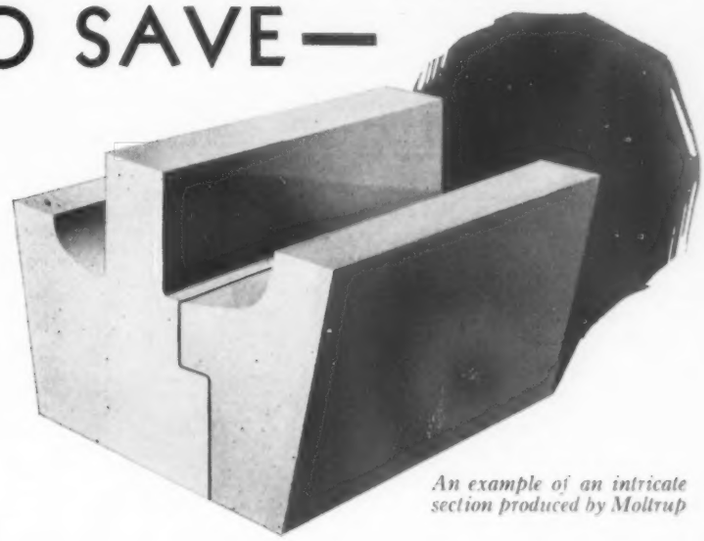
Iron Ore Prices, Page 42

Cleveland—Pittsburgh Steamship Co., Great Lakes subsidiary of the United States Steel Corp., is scheduling approximately 15 vessels to start shipping iron ore May 1. Last year the company's boats were not put in service until July 1. A few of the independents may begin hauling ore before May 1. While the tonnage to be moved this season will be larger than last year, when 3,588,000 was handled, the earlier start does not indicate urgent demand for ore, but is due to operating considerations. Ore in stockpile in Minnesota May 1 takes an extra tax as personal property, but ore in transit from stockpile to dock before that date does not come under that tax.

Duluth reports that loading into cars has already started at a number of mines. Some ore has been received from the Cuyuna range at the Great Northern railroad's dock at Superior, Wis., and 150,000 tons, more than all the ore shipped from that range in 1932, is reported due there by May 1. This is mainly for the Inland Steel Co., which last year surrendered all its Cuyuna leases.

Iron ore consumers have not yet figured their probable requirements for the season, and prices have not been determined.

ANOTHER WAY TO SAVE—



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MOLTRUP

Scrap

Railroad Dismantling to Give 200,000 Tons—Buying Light But Strength Holds Well

Pittsburgh—The market continues to move ahead with a further advance of 25 cents a ton. The leading interest here has purchased only for immediate use and is not adding to its stock. Last week this mill bought 1500 tons for one point and 2000 tons for another mill, both No. 1 heavy melting steel. The month's railroad lists just out are small and are expected to bring over $10 because of the interest a down-river mill is expected to supply. The Baltimore & Ohio's 6040-ton list includes 1000 tons of No. 1 heavy melting, 1500 tons of destroyed cars and 800 tons of uncut structural. Bids close April 3. The Pennsylvania railroad's list offers 1350 tons of heavy melting, 1415 tons of rail steel and 800 tons each of cast and iron wheels. Ship-

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL		
Birmingham	6.50	7.00
Boston, dealers	3.75	4.00
Buffalo, No. 1	**7.00**	**7.25**
Buffalo, No. 2	**6.00**	**6.25**
Chicago	5.00	5.50
Cleve., No. 1	7.00	7.50
Cleve., No. 2	6.00	6.50
Det., No. 1 deal.	4.75	5.25
Det., No. 2 deal.	4.25	4.75
E. Pa. del. mill		6.50
E. Pa., No. 2 del.	**5.00**	**5.50**
Federal, Ill.	4.75	5.25
Granite City, Ill.	4.50	5.00
N. Y., deal. R. R.		5.00
N. Y. deal. No. 2	3.50	4.00
N. Y. deal. yd.	2.50	3.00
Pitts. No. 1	9.00	9.50
St. L. No. 1 sel.	5.50	6.00
Valleys, No. 1	9.00	9.50

COMPRESSED SHEETS		
Buffalo, dealers	6.00	6.25
Chi. (Factory)	4.00	4.50
Cleveland	6.50	7.00
Detroit, dealers	4.50	5.00
E. Pa. new mat.	5.00	6.00
Pittsburgh	8.50	9.00
Valleys	8.50	9.00

BUNDLED SHEETS		
Buffalo	4.00	4.50
Cincinnati, del.	4.25	4.75
Cleveland	4.50	5.00
Eastern, Pa.		5.00
Pittsburgh	7.50	8.00
St. Louis	1.50	2.00

SHEET CLIPPINGS LOOSE		
Chicago	2.00	2.50
Cincinnati	1.75	2.25
Detroit, dealers	1.25	1.75
St. Louis	1.50	2.00

STEEL RAILS SHORT		
Birmingham	7.50	8.00
Boston, dealers	3.50	3.75
Buffalo	9.50	10.00
Chicago (3 ft.)	8.00	8.50
Chicago (2 ft.)	8.50	9.00
Cincinnati, del.	8.50	9.00
Detroit, deal.	8.00	8.50
Pitts. (open-hearth, 3 ft. and less)	10.00	10.50
St. Louis	7.00	7.50

STOVE PLATE		
Birmingham	5.50	6.00
Boston, dealers	**2.00**	**2.50**
Buffalo	**7.00**	**7.25**
Chicago, net	5.00	5.50
Cinci., deal. net	3.50	4.00
Det., net deal.	2.50	3.00
Eastern Pa.	**5.50**	**6.00**
N. Y., deal. mill	2.50	3.00
St. Louis	5.50	6.00

COUPLERS, SPRINGS		
Buffalo	8.50	9.00
Chicago	7.00	7.50
Eastern Pa.	8.00	8.50
Pittsburgh	10.00	10.50
St. Louis	5.25	6.25

ANGLE BARS—STEEL		
Chicago	7.00	7.50
St. Louis	5.75	6.25

LOW PHOSPHORUS		
Buffalo, billets and bloom crops	8.50	9.00
Cleveland bil. and bloom crops	10.00	11.00
Eastern Pa.		**10.00**
Pittsburgh billet bloom crops	10.75	11.25
Pitts., sheet bar crops	10.75	11.25

FROGS, SWITCHES		
Chicago	5.00	5.50
St. Louis	5.00	5.50

SHOVELING STEEL		
Chicago	5.00	5.50
Cleveland	5.75	6.00
St. Louis	4.75	5.25

RAILROAD WROUGHT		
Birmingham	5.50	6.00
Boston, dealers	1.00	1.50
Buffalo, No. 1	**4.25**	**4.75**
Buffalo, No. 2	**7.00**	**7.25**
Chi., No. 1, net	4.50	5.00
Chicago, No. 2	5.00	5.50
Cinci., No. 2	5.25	5.75
Eastern Pa.	6.50	7.50
N. Y., No. 1, deal.	2.50	3.00
Pitts., No. 1	8.75	9.25
St. Louis, No. 1	3.50	4.00
St. Louis, No. 2	**5.00**	**5.50**

SPECIFICATION PIPE		
Boston	3.00	4.00
Eastern Pa.	**6.00**	**7.00**
N. Y., deal	2.00	2.25
St. Louis	4.75	5.25

BUSHELING		
Buffalo, No. 1	**6.00**	**6.25**
Chicago, No. 1	4.00	4.50
Cinci., No. 1 deal.	4.25	4.75
Cinci., No. 2	2.50	3.00
Cleve., No. 2	**4.00**	**4.50**
Det., No. 1 new deal.	3.75	4.25
St. L., No. 1	**3.00**	**3.50**
Val. new No. 1	8.50	9.00

MACHINE TURNINGS		
Birmingham	2.50	3.00
Boston, dealers	0.75	1.00
Buffalo	**3.75**	**4.25**
Chicago	**3.25**	**3.75**
Cinci., deal	3.00	3.50
Cleveland	**4.00**	**4.25**
Detroit	2.50	3.00
Eastern Pa.	3.50	4.00
N. Y., deal.	1.35	1.50
Pittsburgh	6.75	7.25
St. Louis	1.50	2.00
Valleys	6.75	7.25

BORINGS AND TURNINGS		
For Blast Furnace Use		
Boston, dealers	0.75	0.90
Buffalo	**3.00**	**3.50**
Cinci., deal	3.00	3.50
Cleveland	4.50	5.00
Detroit, deal.	3.00	3.50
Eastern Pa.	3.50	3.75
N. Y., deal.	1.35	1.50
Pittsburgh	5.50	6.00

CAST IRON BORINGS		
Birming., chem.	8.50	9.50
Birming., plain	2.50	3.00
Boston, chem.	5.50	6.00
Boston, dealers	1.00	1.25
Buffalo	**3.50**	**4.00**
Chicago	3.50	4.00
Cinci., deal.	3.00	3.50
Cleveland	4.50	5.00
Detroit, deal.	3.00	3.50
Eastern Pa.	3.50	3.75
E. Pa., chem.	8.00	10.00
N. Y., deal.	1.00	1.50
Pittsburgh	**5.50**	**6.00**
St. Louis	2.00	2.50

PIPE AND FLUES		
Cinci., deal.	3.25	3.50

RAILROAD GRATE BARS		
Buffalo	4.00	4.50
Chicago, net	5.00	5.50
Cincinnati	4.25	4.75
Eastern Pa.	5.50	6.00
N. Y., deal.	3.50	4.00
St. Louis	4.50	5.00

FORGE FLASHINGS		
Boston, dealers	2.00	2.50
Buffalo	5.50	6.00
Cleve. ov. 10 in.	6.00	6.50
Detroit	2.75	3.25

FORGE SCRAP		
Boston, dealers	1.75	2.00
Chicago	6.50	7.00
Eastern Pa., del.	5.00	5.50

ARCH BARS, TRANSOMS		
Chicago, net	5.00	5.50
St. Louis	3.50	4.00

AXLE TURNINGS		
Boston, deal.	2.50	3.00
Buffalo	6.00	6.25
Chi., elec. fce.	4.50	5.00
Cleveland	5.50	6.00
Eastern Pa., del.	**6.00**	**7.00**
Pittsburgh, O. H.	7.00	7.50
St. Louis	3.00	3.50

STEEL CAR AXLES		
Birmingham	9.00	9.50
Boston, ship. pt.	5.50	6.50
Buffalo	10.00	10.50
Chicago, net	9.00	9.50
Eastern Pa.		14.50
St. Louis	8.75	9.25

SHAFTING		
Boston, ship pt.	6.50	7.00
Eastern Pa.	11.00	12.00
N. Y., deal.	5.50	6.00
St. Louis	7.50	8.00

CAR WHEELS		
Birming., iron	6.50	7.00
Boston, iron deal.	3.00	3.25
Buffalo, iron	7.00	8.00
Buffalo, steel	8.50	9.00
Chicago, iron	8.25	8.75
Chi., rolled steel	7.50	8.00
Cincinnati iron	6.25	6.75
E. Pa. iron		8.50
E. Pa. steel	8.00	8.50
Pitts., iron	7.75	8.25
Pitts., steel	9.25	9.75
St. Louis, iron	4.75	5.25
St. Louis, steel	6.00	6.50

NO. 1 CAST SCRAP		
Birmingham	6.50	7.00
Boston, No. 2	2.25	2.50
Boston, textile	6.00	6.25
Buffalo, cupola	9.00	9.25
Buffalo (mach.)	9.50	10.00
Chicago, agri., net	5.25	5.75
Chi., mach. net	6.25	6.75
Chi., railroad net	5.75	6.25
Cinci., mach. cup	6.50	7.00
Cleve. cupola	7.00	8.00
Det., net deal.	6.50	7.00
E. Pa. cupola	9.00	9.50
N. Y., cup. deal.	4.50	5.00
N. Y., del. local foundries	7.00	7.50
Pitts., cupola	9.00	9.50
San Fran., del.	13.50	14.00
Seattle	4.50	6.50
St. L. No. 1 mach.	**6.00**	**6.50**
St. L. No. 1	5.50	6.00

HEAVY CAST		
Boston, del.	3.25	3.50
Bost., mach. cast	7.00	7.50
Buffalo, break	6.50	7.00
Cleve., break	5.50	6.00
Detroit, auto net deal.	7.00	7.50
Det. break., deal.	4.00	4.50
Eastern Pa.	8.00	8.50
N. Y. No. 1, deal.	4.50	5.00
N. Y. break, deal.	4.00	4.50
Pittsburgh	8.00	8.50

MALLEABLE		
Boston, consum.	6.75	7.25
Buffalo	8.00	8.50
Chicago, agri.	5.00	5.50
Chicago, R. R.	6.50	7.00
Cinci., agri. del.	6.00	6.50
Cinci., R. R., del.	6.50	7.00
Cleveland, rail	7.50	8.00
Det. auto deal.	5.00	5.50
St. Louis	7.00	7.50

RAILS FOR ROLLING		
5 feet and over		
Birmingham	7.00	8.00
Boston, deal.	5.00	5.50
Buffalo	7.00	7.50
Chicago	8.00	8.50
Eastern Pa.		9.50
New York dealer	3.75	4.25
St. Louis	7.00	7.50

LOCOMOTIVE TIRES		
Chicago, cut	7.50	8.00
St. L., No. 1	5.00	5.50

LOW PHOS. PUNCHINGS		
Buffalo	9.00	9.50
Chicago	7.50	8.00
Eastern Pa.	8.00	8.50
Pittsburgh	10.00	10.50

ment of machine shop turnings has been resumed on an order to one point that had suspended. Pittsburgh Steel Co. is preparing to barge scrap to its Monessen, Pa., plant from St. Louis.

Chicago—Scrap is quiet as to new buying, consumers of heavy melting steel continuing out of the market while small buyers are less active than formerly in anticipating future needs. Prices are steady but unchanged with strength contributed by the small volume of offerings. Heavy melting steel nominally is unchanged at $5 to $5.50, the price prevailing throughout first quarter.

Philadelphia—Despite lack of general buying, the scrap market is strong. In some grades, particularly No. 2 steel, supplies appear light, although the Pencoyd, Pa., consumer recently was able to pick up some tonnage at $4.50, delivered. This buyer also bought some No. 1 cast at $7.50, delivered. The 6000 tons of nickel steel reported in a recent issue as having been bought for Germany, went at $12, f.a.s.

Boston—Higher price for No. 1 steel for export has resulted in a firm price for delivery to several New England points, Worcester paying $5.50, delivered, for No. 1 and $4.50 for No. 2.

Heavy melting steel is firmer, up 15 cents, and No. 2 cast and scrap rails are stronger.

New York—New scrap buying is light. No. 2 steel is coming out slowly against export orders at $4, barge, although $3.50 is being paid for most of this grade. Steelmaking grades move slowly for domestic use. Stove plate for Bayonne, N. J., brings $4.50, barge.

Southern railroad is understood to be about to embark on a scrap program involving 15,000 freight cars and 100 locomotives, to yield an estimated 200,000 tons of scrap.

Buffalo—There is no tonnage demand for scrap. Prices are nominally higher but confirming sales are lacking. Melt and receipts continue light, with no inquiry from principal consumers.

Cleveland—The tone of the iron and steel scrap market here continues to strengthen, but sales are infrequent and for small miscellaneous lots.

Detroit—With a slow but gradual improvement in automobile production, offerings of scrap are expected to increase. It will, however, be three or four weeks before anything approaching normal production for the times it attained. Heavy melting steel, compressed sheets and No. 1 busheling have been marked up 25 cents a ton and No. 2 steel 50 cents a ton, reflecting to some extent the rise of the Pittsburgh market. The market here is strong and shows signs of going higher.

Cincinnati—Mills are in the market for scrap but with production generally unimproved, now fail to show the urge to buy which followed immediately after the banking holiday. Material is scarce.

St. Louis—Iron and steel scrap prices are slightly firmer, but actual trading has not improved in any marked degree.

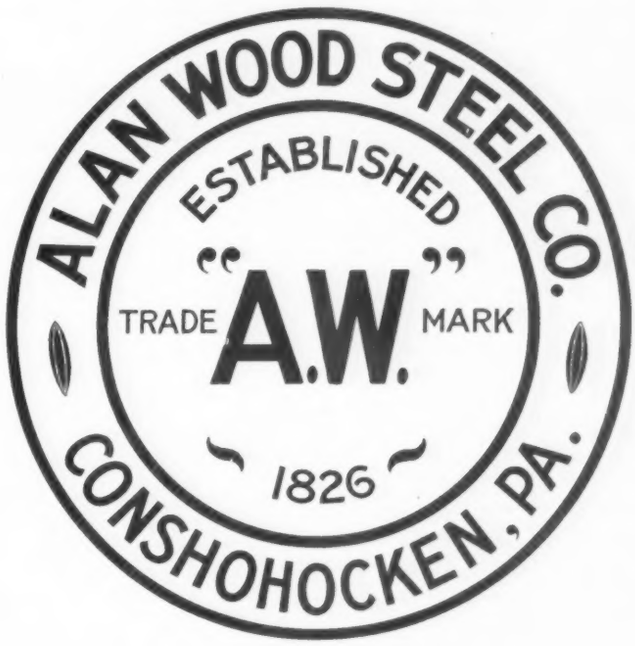
Birmingham, Ala.—Conditions in steel and iron scrap are unchanged, demand being practically absent and prices low.

Toronto, Ont.—Trading in iron and steel scrap is dull. A few special lines are moving in small lots. Steel scrap has no market. No. 1 machinery cast, for which dealers are offering $9 to $9.50 per net ton, is active.

Carbon and Alloy Steels
Blue Annealed Sheets,
Sheared Plates: also Billets.

Rolled Steel Floor Plates
Diamond, Diamondette and Ribbed Patterns

Swede Pig Iron
Rainey-Wood Coke



107 Years Iron and Steel Making Experience

ALAN WOOD STEEL CO.
CONSHOHOCKEN, PA.

Branch Offices:

Philadelphia — New York — Los Angeles
Seattle — San Francisco — Houston

Warehouse

Warehouse Selling Showing Some Forward Tendency

Pittsburgh—March sales averaged the same as February. Bars and small shapes are weak and one mill here continues to solicit pound lots trucked to the consumer's door for little more than the mill base price. One such order for 500 pounds was delivered into East Pittsburgh, Pa., last week at well under 2.00c. The nominal market on bars is 2.60c.

Chicago—Sales show no consistent improvement but recent gains are held and jobbers look for business held up during March to be placed this month. Prices are unchanged following recent elimination of the 50-cent extra on flat and square cold-finished bars. All sizes are quoted 3.00c.

Philadelphia—Changes in sheet prices out of warehouse to conform with the recent revisions in mill schedules, will likely be announced within the next fortnight here. Meanwhile, warehouse quotations generally are unchanged. Improvement in trading over the past week or 10 days placed March business about on a parity with January and February.

New York—With few exceptions, jobbers note no increase in volume and the usual gain in March failed to develop. Most jobbers are covered against the mill advance in galvanized sheets this week.

Cleveland—An irregular run of orders from day to day, with little tonnage in the aggregate, is noted in warehouse business here. Difficulties with some banks here and in nearby territory still restrict trade. Though some mills have announced an advance in galvanized sheets from 2.60c to 2.70c, base, Pittsburgh, effective April 5, warehouses have not yet increased their price.

Cincinnati—Demand from warehouse is low. Work for breweries so far has brought little business. Prices are unchanged.

St. Louis—March volume of iron and steel warehouses and jobbers was disappointing. Preparations for resumption of beermaking have resulted in the movement of a fair volume of a variety of goods, notably plates, sheets, certain bars and hoops and bands.

Ferroalloys Steady

Ferroalloy Prices, Page 42

While there is some discussion at New York of a change in the spot price of ferromanganese, back to the old level of $68, duty paid, at which contracts are offered, $61, duty paid, still prevails. Specifications are light. Domestic spiegeleisen, 19 to 21 per cent, is moving slowly at $24, furnace, for spot shipment.

Wickwire Spencer Steel Co., New York, reports net loss, after charges, in 1932 of $2,833,250.

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials except reinforcing and Swedish bars)

STEEL BARS □

Baltimore*	2.35c
Boston††	2.90c
Buffalo	2.95c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	2.40c
Los Ang.	3.30c
New Orleans	**2.50c**
New York‡(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.60c
Portland	3.35c
San Fran.	3.15c
Seattle	3.00c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3 25c

IRON BARS □

Baltimore	2.35c
Boston††	3.10c
Buffalo	3.15c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia	2.45c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS □

Baltimore	2.35c-3.00c
Boston	3.10c-3 25c
Buffalo	2.95c
Chattanooga	3.00c
Cincinnati	3.00c
Cleveland	2.10c-2.25c
Detroit	2.85c
Houston	3.00c
Los Ang. cl.	2.10c
New Orleans	**2.75c**
Los Ang., lcl	2.40c
New York	2.65c-3.10c
Phila.	2.62½c
Pittsburgh	2.30c
San Fran. cl.	2.00c
San Fran. lcl	2.40c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES □

Baltimore*	2.35c
Boston††	3.00c
Buffalo	3.20c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	2.65c
Los Ang.	3.30c
New Orleans	**3.50c**
New York(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.85c
Portland	3.35c
San Fran.	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

PLATES □

Baltimore*	2.35c
Boston††	3.00c
Buffalo	3.20c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Cleve., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.30c
New Orleans	**3.50c**
New York(d)	3.30c
Philadelphia	2.45c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	3.35c
San Fran.	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

NO. 10 BLUE □

Baltimore*	2.80c
Boston††	2.90c-3.00c
Buffalo	3.10c-3.25c
Chattanooga	3.44c
Chicago	2.75c-2.90c
Cincinnati	3.05c
Cleveland	3.00c
Detroit	2.90c-3.05c
Houston	3.35c
Los Ang.	3.60c
New Orleans	**3.25c**
New York	2.75c
Portland	4.00c
Phila.*† (e)	**2.70c**
Pitts.**	**2.65-2.90c**
San Fran.	3.50c
Seattle	**3.50c**
St. Louis	3.00c-3.15c
St. Paul	3.45c
Tulsa	3.70c

NO. 24 BLACK □

Balt.*†	3.50c
Boston††	3.85c
Buffalo	3.70c
Chattanooga	3.50c
Chicago	**3.30c**
Cincinnati	3.50c
Cleveland	3.25c
Detroit	3.30c
Los Ang.	4.20c
New York	3.25c
Phila.*†(e)	**3.15c**
Pitts.**	3.35c
Portland	4.50c
San Fran.	3.90c
Seattle	**4.25c**
St. Louis	3.70c
St. Paul	3.695c
Tulsa	4.75c

NO. 24 GAL. SHEETS □

Balt.*†	4.00c
Buffalo	4.00c
Boston††	4.05c
Chattanooga	3.95c
Chicago	**3.25c-3.50c**

††Base 15,000 lbs., extras on less.

Cincinnati	**3.55c**
Cleveland	**3.50c**
Detroit	3.50c
Houston	3.57c
Los Ang.	4.50c
New Orleans	**3.95c**
New York	3.50c
Phila.*† (e)	**3.50c**
Pitts.**	**3.85c**
Portland	5.00c
San Fran.	4.55c
Seattle	**4.75c**
St. Louis	4.00c
St. Paul	4.19c
Tulsa	5.10c

†BANDS □

Baltimore	2.65c
Boston††	3.40c
Buffalo	3.30c
Chattanooga	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	2.85c
Los Ang.	3.80c
New Orleans	**2.75c**
New York(d)	3.30c
Philadelphia	2.75c
Pittsburgh	2.95c
Portland	3.85c
San Fran.	3.15c
Seattle	3.50c
St. Paul	3.20c
Tulsa	3.45c

†HOOPS □

Baltimore	2.65c
Boston	4.90c
Buffalo	3.95c
Chicago	3.50c
Cincinnati	3.75c
Det. No. 14 & lighter	3.65c
New York	3.30c
Philadelphia	3.00c
Pittsburgh	3.60c
Seattle	5.00c
St. Paul	3.75c

†New extras apply.

COLD FIN. STEEL □

Rounds and Hexagons

Baltimore (c)*	3.48c
Boston	3.60c
Buffalo	3.00c
Chattanooga*	3.65c
Chicago	3.00c
Cincinnati	3.32c
Cleveland	2.95c
Detroit	3.15c
Los Ang. (a)	4.25c
New York(g)	3.54c
Philadelphia	3.35c
Pittsburgh	2.95c
Portland (a)	4.50c
San Fran(d)(f)	5.55c
Seattle (a)	4.50c
St. Paul (a)	3.20c
St. Louis	3.36c
Tulsa	4.65c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted, Philadelphia, Chicago, Cleveland, Detroit.

COLD ROLL. STRIP □

Boston 0.100 in., 500 lb. lots	5.20c
Buffalo	5.25c
Chicago (b)	5.65c
Cincinnati	5.80c
Cleve. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(a) Rounds, hex. only.
(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
(e) New mill classif.
(f) Rounds only.
(g) Bessemer analysis extras included.
‡Domestic bars.
*Plus quan. extras.
**Under 25 bundles.
*†50 or more bundles.

Pacific Coast

Plate Awards Three Times and Pipe Awards Equal to Same Period in 1932—Federal and State Projects Furnish Most Tonnage —Japan Seeking More Scrap But Offers Are Too Low

San Francisco—(*By Air Mail*)—Few iron and steel awards were noted this week. Only one reinforcing steel bar contract was reported placed. Los Angeles Iron & Steel Co. secured 100 tons for the Second street bridge over the San Gabriel river, Los Angeles. Bids have been opened on 269 tons for highway work in San Francisco county, California, for the state. Warehouse prices in the Los Angeles and San Francisco districts remain unchanged at 2.00c, base, on carload lots. Movement of merchant bar steel has not been large and prices hold at 2.10c, c.i.f.

Plate awards so far this year aggregate over three times the tonnage booked for the same period in 1932. Plate prices remain weak at 1.85c, c.i.f.

Consolidated Steel Corp. booked 492 tons for a bridge over the San Diego river in California for the state, and Moore Drydock Co. took 250 tons for a balloon hangar at Sunnyvale, Calif. Bids on 800 tons for the San Diego postoffice have been postponed until April 3. The project for two crossings in Los Angeles, involving 425 tons, has been indefinitely postponed. Bids have been opened on 100 tons for a postoffice at Ventura, Calif. Wide flange material holds at 2.20c, c.i.f., while standard shapes are quoted at 2.10c.

Cast iron pipe placed so far this year equals the tonnage for the same period a year ago. Itamco Pipe Corp., Los Angeles, secured 136 tons of 8-inch pipe for Burbank, Calif., and Crane Co. took 100 tons of 6-inch pipe for Santa Monica, Calif. Oakland, Calif., has opened bids on 324 tons of 2 to 8-inch pipe.

Northwest More Active

Seattle—Iron and steel awards in the Pacific Northwest totaled nearly 1100 tons this week, most of it federal and state. Private enterprises are beginning to develop although handicapped by lack of financial support as are also many projects contemplated by municipalities.

Reinforcing specifications are small. Liesch & Toft, Marshfield, Oreg., have been awarded the Sand Point, Columbia river dike job by United States engineers, at $164,500.

Plate awards totaled 500 tons. Puget Sound Machinery Depot, Seattle, has the contract for a Seattle water standpipe, involving 250 tons of 5/16 to 1-inch plates. Pacific Coast Steel Corp., Seattle, will furnish 175 tons of sheet steel piling for a federal harbor improvement at Nome, Alaska. Seattle Boiler Works is fabricating three all-welded oil tanks, 525,000 gallons capacity, for the Union Oil Co. Birchfield Boiler Co., Tacoma, Wash., is supplying 975 feet of pontoon pipe, at $2.60, for the Port of Grays Harbor.

Isaacson Iron Works, Seattle, booked 125 tons of shapes for a 200-foot span over the Jefferson river, Montana, for the Mammoth Mines Corp., Twin Bridges, Mont.

Japan still is seeking scrap but at

(*Please turn to Page* 60)

Steel in Europe

British Market Improves—Merger Step Completed

London—(*By Radio*)—All sections of the Middlesbrough market are steady, output is increasing and two blast furnace stacks have been blown in. Domestic pig iron consumption is heavier. The semifinished and finished steel position is improving slightly owing to shipbuilding and railway orders and relatively limited competition from the Continent. Trade in the Midlands and Scotland is disappointing.

Merger of Dorman, Long & Co. Ltd., Middlesbrough, and South Durham Steel & Iron Co. Ltd., West Hartlepool, has been completed. This accomplishment is one step in the general reorganization plan now under way.

The Continent reports conditions quiet and prices easier, owing to uncertainty arising from attempts to organize various comptoirs and also from increasing competition from Germany. Berlin reports more active export trade, especially in plates.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, March 30

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	
		£ s d		£ s d
PIG IRON				
Foundry, 2.50-3.00 Silicon	$10.00	2 18 6	$8.27	1 14 0
Basic bessemer	9.23	2 14 0*	6.57	1 7 0
Hematite, Phos. .03-.05	10.09	2 19 0	.....	.....
SEMIFINISHED STEEL				
Billets	$17.10	5 0 0	$10.22	2 2 0
Wire rods, No. 5 gage	25.65	7 10 0	21.90	4 10 0
FINISHED STEEL				
Standard rails	$26.51	7 15 0	$26.77	5 10 0
Merchant bars	.99c	6 10 0	.52c to .53c	2 7 0 to 2 8 0
Structural shapes	1.13c	7 7 6	.46c	2 2 0
Plates, †¼ in. or 5 mm.	1.30c	8 10 0	.74c	3 7 6
Sheets, black, 24 gage or 0.5 mm.	1.30c	8 10 0	1.18c	5 7 6
Sheets, gal., 24 gage, corr.	1.61c	10 10 0	1.46c	6 12 6
Bands and strips	1.19c	7 15 0	.77c to .80c	3 10 0 to 3 12 6
Plain wire, base	1.34c	8 15 0	1.18c	5 7 6
Galvanized wire, base	1.61c	10 10 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	1.84c	12 0 0	1.27c	5 15 0
Tin plate, box 108 lbs.	$ 2.69	0 15 9	.....	.....

British ferromanganese $68 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d		French Francs		Belgian Francs		Reich Marks	
Fdy. pig iron, Si. 2.5	$10.69	3 2 6†	$ 7.86	200	$ 8.09	290	$16.46	69
Basic bessemer pig iron	10.09	2 19 0†*	6.68	170	6.14	220	18.01	75.50
Furnace coke	2.27	0 13 3	4.72	120	3.07	110	4.59	19.25
Billets	17.10	5 0 0	14.54	370	10.46	375	23.02	96.50
Standard rails	1.26c	8 5 0	1.25c	697	1.50c	1,150	1.43c	132
Merchant bars	1.03c	6 15 0	.95c	530	.62c	475	1.19c	110
Structural shapes	1.34c	8 15 0	.99c	550	.61c	470	1.16c	107.50
Plates, †¼-in. or 5 mm.	1.34c	8 15 0	1.22c	680	.75c	580	1.37c	127
Sheets, black	1.45c	9 10 0‡	1.53c	850‡	.91c	700‡	1.56c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	1.80c	11 15 0	2.43c	1,350	1.87c	1,440	4.00c	370
Plain wire	1.34c	8 15 0	2.03c	1,130	1.69c	1,300	1.91c	177
Bands and strips	1.45c	9 10 0	.95c	530	.88c	675	1.37c	127

*Basic. †British ship-plates, Continental, bridge plates. ‡24 ga. ‡1 to 3 mm. basic price.
British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel.
(a) dd. Middlebrough

Nonferrous Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 5.75c, Conn., for copper

SHEETS	
Yellow brass (high)	11.25
Copper, hot rolled	13.87½
Lead sheets, cut, to jobbers	7.00
Zinc sheets (100-lb. base)..	9.00
TUBES AND PIPES	
Seamless yellow brass (high)	13.50
Seamless copper	12.62½
RODS	
Yellow brass (high, full turning)	8.75
Naval brass	9.87½
ANODES	
Copper, untrimmed	10.75
WIRE	
Yellow brass (high)	11.25

Old Metals

Dealers' buying prices, cents lb.

NO. 1 COMPOSITION RED BRASS	
New York	2.50 to 2.62½
Chicago	2.00 to 2.25
Cleveland	2.25 to 2.50
St. Louis	2.25
HEAVY YELLOW BRASS	
New York	1.62½ to 1.75
HEAVY COPPER AND WIRE	
New York	3.62½ to 3.87½
Chicago, No. 1	3.00 to 3.12½
Cleveland	2.50 to 3.00
St. Louis	2.50
COMPOSITION BRASS BORINGS	
New York	2.25 to 2.50
YELLOW BRASS TUBING	
Cleveland	1.75 to 2.00
LIGHT COPPER	
New York	2.75 to 2.87½
Chicago	2.00 to 2.12½
Cleveland	2.25 to 2.50
St. Louis	2.25
LIGHT BRASS	
Chicago	1.00 to 1.12½
Cleveland	1.25 to 1.75
St. Louis	1.25
LEAD	
New York	2.00 to 2.12½
Cleveland	1.50 to 1.75
Chicago	1.87½ to 2.12½
St. Louis	2.00
ZINC	
New York	1.12½ to 1.25
Cleveland	1.00 to 1.12½
Chicago	1.00 to 1.12½
St. Louis	1.25
ALUMINUM	
Clippings, new, soft, Cleve.	9.50 to 10.50
Clippings, hard, Cleveland	6.00 to 7.00
Borings, Cleveland	2.50 to 3.00
Mixed cast, Cleveland	3.75 to 4.25
Mixed cast, St. Louis	4.00 to 4.25

Secondary Metals

Brass ingot, 85-5-5-5	5.25
Remelt aluminum No. 12..	8.00 to 9.00

Metals

Further Easiness Appears in Zinc but Copper and Lead Are Fairly Steady—Demand Slow

New York—Further easiness has developed in zinc but copper, lead and antimony have been fairly steady. Scarcity of spot Straits tin has resulted in a premium on this position. Shading has been disclosed in virgin aluminum. All metals have been in quiet demand.

Copper—Domestic copper sales were extremely light last week, the business reported done being for May and June delivery. The metal was more freely available from custom smelters at 5.00c, Connecticut, but any marked pickup in buying is expected to result immediately in higher prices. Further curtailment is expected to be effected by domestic producers this summer. Current consumption is understood to be about balancing present output of around 20,000 tons monthly. Brass ingot declined further last week but copper and brass products maintained the recent ¾-cent advance. Scrap was quiet and less abundant.

Lead—Sales for March are estimated to have totaled around 20,000 tons, an increase of 35 per cent over February. About 18,000 tons are already reported on sellers' books for April shipment. Sales last week were mostly in scattered carlots for April shipment. Books were opened Saturday for May business.

Zinc—Dullness was pronounced in zinc last week and the price easiness of the preceding week continued. However, successively lower price levels failed to stimulate buying to any degree. A restriction plan is reported under way in the Tri-State district which is expected to result in increases in prices of both ore and the metal.

Antimony—The market was practically without a test but prices held unchanged.

Tin — Straits tin was quiet last week with business confined mostly to metal for spot and nearby delivery. Due to the scarcity of spot Straits, this position commanded a premium over metal for delivery ahead. March deliveries of tin in this country were 3330 tons, against 3045 tons in February and 3285 tons a year ago.

Aluminum—Shading in virgin ingot has been disclosed, resulting from competition with secondary metal. Small lots have been sold at several cents under recent published quotations with further concessions offered larger buyers. Secondary metal prices held unchanged.

Coke By-Products Firm

New York—Shipments on benzol contracts are fair, but spot buying is light. Lacquer makers are taking less toluol than usual for this period. Distillate prices are firm. Present quotations on sulphate of ammonia are expected to hold through April, with shipments active.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots	Spot
Pure benzol	$0.22
90 per cent benzol	0.22
Toluol	0.30
Solvent naphtha	0.26
Comercial xylol	0.26
Per Pound at Producers' Plants in 250-Pounds Drums	
Phenol	0.153 to 0.173
Per Pound at Producers' Plants	
Naphthalene flakes	4.75 to 5.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Atlantic Seaboard	
Sulphate of ammonia	$1.10

Quicksilver Easier

New York—Quicksilver prices are slightly lower, with small lots quoted $54 a virgin flask of 76 pounds. The market is quiet.

Nonferrous Metal Prices of the Week, Cents a Pound

Spot unless otherwise specified

	Copper: Electro., del. Conn.	Copper: Lake, del. Midwest	Copper: Casting, refinery	Straits Tin: New York Spot	Straits Tin: New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Antimony Spot, N. Y.	Ingot Nickel
March 25	5.00	5.37½	4.75	24.50	24.60	3.00	2.87½	3.05	*22.90	5.87½	35.00
March 27	5.00	5.37½	4.75	24.40	24.50	3.00	2.87½	3.00	*22.90	5.87½	35.00
March 28	5.00	5.37½	4.75	24.25	24.35	3.00	2.87½	2.95	*22.90	5.87½	35.00
March 29	5.00	5.37½	4.75	24.40	24.50	3.00	2.87½	2.95	*22.90	5.87½	35.00
March 30	5.00	5.37½	4.75	24.50	24.65	3.00	2.87½	2.90	*22.90	5.87½	35.00
March 31	5.00	5.37½	4.75	24.50	24.60	3.00	2.87½	2.90	*22.90	5.87½	35.00

*Nominal quotation. Market range 17.90c to 22.90c.

Equipment

New Bar Finish Stimulates Demand for Mill Units

Pittsburgh—Considerable inquiry is out in the steel mill equipment market at present for mill units, changes being necessitated by changing customers' demands for finishes. An example is the new hot-rolled bar which some mills are calling "sized hot-rolled" or "precision rounds," a bar hot-rolled to a plus or minus tolerance of 0.0003-inch. It is being substituted in many uses heretofore specifying cold-drawn bars, with the obvious exception of bessemer cold-rolled. Two Ohio mills pioneered this development and it has forced other producers within the past several weeks to inquire for mill equipment that will bring them in line to make this "sized hot-rolled" bar.

Inquiries are out for mill changes at Republic Steel Corp. and inquiries have been issued for a rearrangement of some rolling mill facilities at Illinois Steel Co., as well as equipment for the manufacture of stainless steel by the latter. American Sheet & Tin Plate Co. is inquiring for a one-stand 4-high mill. An order for a 4-high mill embodying a patented table has been placed with an equipment maker in this district by the Bethlehem Steel Co. for delivery to Sparrows Point, Md. Follansbee Bros. Co. is inquiring for rolls for its 38-inch steckel mill which will be in operation in the next two weeks. A cold-forming machine for the H. H. Robertson Co., Pittsburgh, is being delivered by a New Jersey manufacturer.

Worcester, Mass.—Demand continues light and while several shops have shared in some export business to Japan recently, most of such machinery has been shipped from stock. Inquiry is generally for one or two tools. For the Westinghouse Electric Mfg. Co. plant at Springfield a list of required machinery is being compiled.

New York—Machinery buying shows a spotty improvement. Japan has placed ten more machines against a sizeable list, part of which was placed several weeks ago. All machinery being bought by the Japanese is for immediate delivery and for the most part comes from stock, this being true of 10 lathes placed in New England and 12 screw machines in the Cleveland district, awarded some time back.

For a prison shop at Walkill, N. Y., figures are being asked on 12 tools, including lathes, radial drill, shaper and shear. Several shops figuring on brewery equipment are considering the purchase of fabricating equipment. One dealer sold two engine lathes this week.

Chicago—Equipment demand is spotty and generally unimproved, despite occasional reports of heavier inquiry. Most active types of equipment are those identified with public projects. One crane manufacturer is busy on equipment for Illinois waterway locks. An increase is noted in demand for miscellaneous equipment identified with the manufacture and dispensing of beer, while commoner types of production tools continue slow.

Cleveland—Interest in new equipment continues to lag, sales and inquiries holding at a low point. Some government business has been placed here recently, but of no appreciable volume. Outlook at best is unsettled.

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Personals

(*Concluded from Page 17*)

want them. He has not striven for brilliancy, though he can turn a good phrase when he wishes, and he has wisely refused to encumber with too much psychological baggage this first full telling of an important life story."

□ □ □

E. P. Bullard, E. C. Bullard, D. B. Bullard, J. W. Bray, A. E. North, E. P. Blanchard, H. C. Bullard, J. W. C. Bullard and T. E. Dunn were elected directors of the Bullard Co., Bridgeport, Conn., at the annual meeting March 15. The board elected the following officers of the company: President, E. P. Bullard; vice presidents, E. C. Bullard, D. B. Bullard and Mr. Bray; secretary-treasurer, Mr. North; and assistant secretary-treasurer, G. L. Todd.

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Dr. Lyman J. Briggs, acting director of the bureau of standards, Washington, since the death of Dr. George K. Burgess, last July, has been nominated for director of bureau. He is 58, has been with the government since 1896, entered the bureau of standards in 1920, and became assistant director in 1927.

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L. Woodward Franzheim was elected to succeed William H. Manning as treasurer, Wheeling Steel Corp., Wheeling, W. Va., following the annual stockholders' meeting March 28.

Alexander Glass, chairman, and William W. Holloway, president, were re-elected, as were the following other officers: Alan H. Woodward, vice chairman; A. J. McFarland, first vice president; John L. Neudoerfer, vice president; Howard P. Beswick, secretary; Robert E. Wasser, assistant secretary; and Rhodes D. Swinburne, comptroller.

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Robert E. Stanley, president, International Nickel Co., has been elected a director of Babcock & Wilcox Tube Co., Beaver Falls, Pa.

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F. H. Chapin, president, National Acme Co., Cleveland, is now also chairman, succeeding A. W. Henn, who remains a director.

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E. R. Spencer, mechanical engineer, Texas-Empire Pipe Line Co., Tulsa, Okla., has been transferred to the home office at Houston, Tex.

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Burt S. Shafer has been made Dallas, Tex., representative for South Chester Tube Co., South Chester, Pa. His territory includes North Texas.

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Dr. S. H. Knight, professor of geology, University of Wyoming, Laramie, Wyo., has been appointed head of the new Wyoming geological survey.

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Carl Scholle has been placed in charge of the sales office and warehouse recently opened in Houston, Tex., by Ohio Injector Co., Wadsworth, O.

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George L. Collord, vice president, Shenango Furnace Co., Pittsburgh, has been elected a director of the Sharon Steel Hoop Co., Sharon, Pa., to succeed W. W. Galbreath.

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T. R. Denman has been elected president of the Pueblo, Colo., engineering society, C. J. Gustafson vice president, P. C. Croll treasurer, and H. B. Dick secretary.

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Donald C. McGrew, who was connected with the legal department of the Colorado Fuel & Iron Co., Denver and Pueblo, Colo., has been appointed assistant secretary of the company.

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L. T. McCloskey has resigned as vice president of Continental-Diamond Fibre Co. to become associated with Taylor & Co. Inc., Norristown, Pa., manufacturer of vulcanized fibre and phenol fibre.

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O. L. Bumpas has been appointed sales representative of the chain link and ornamental fence department of the Continental Steel Corp., Kokomo, Ind., in Pittsburgh with headquarters in the Oliver building.

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Arch V. Ritts, formerly chief engineer of Costello Engineering Co., Pittsburgh, has become associated with the Pennsylvania Industrial Engineers, 50 Penn avenue, Pittsburgh, as secretary and treasurer.

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T. H. Steffins, general manager, Sand Springs Railway Co., Sand Springs, Okla., is temporarily filling the position of master mechanic and purchasing agent of the company, made vacant by the death recently of J. E. Erwin.

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Cooper Pogue, Chamber of Commerce building, Cincinnati, has been appointed sales representative in the Cincinnati district by the Coppus Engineering Corp., Worcester, Mass., for its line of ventilating and industrial air filters.

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Tom Jackson has been appointed Gulf Coast representative for Oil Field Engineering Co., Fort Worth, Tex., manufacturer of oil field drilling equipment. He has established headquarters at 3205 Navigation boulevard, Houston, Tex.

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E. A. Muller, president, King Machine Tool Co., Cincinnati, has become acting president of the National Machine Tool Builders association following the resignation of H. S. Beal on becoming president of the Sullivan Machinery Co., Chicago.

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Ray Linn, 1432 Jermain drive, Toledo, O., now is a representative of the Ex-Cell-O Aircraft & Tool Corp., Detroit, in the Toledo territory. He will also represent the Continental Tool Works and the Krueger-Wayne Tool Co., which are divisions of the Ex-Cell-O corporation.

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Evans Woollen, president, Fletcher Trust Co., Indianapolis, has been elected a director of the Link-Belt Co., Chicago. The following directors have been re-elected: George P. Torrence, president; Alfred Kauffmann, vice president; and Henry F. Pope, president, National Malleable & Steel Castings Co., Cleveland.

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M. P. Hare, Dallas, Tex., has been appointed to represent Shand & Jurs Sales Co., Denver, a subsidiary of Shand & Jurs Co., Berkley, Calif., manufacturer of oil field equipment. He was formerly with the Fusion Welding Corp., a division of the Chicago Steel & Wire Co., Chicago. He will cover Texas, with headquarters at Dallas.

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Claude K. Boettcher, Denver, resigned recently as director of the Colorado Fuel & Iron Co. The following directors were elected: George B. Berger, Fred Farrar, J. C. Hamilton, W. A. Maxwell Jr., S. G. Pierson, Albert A. Reed, Arthur Roeder, J. F. Welborn and E. T. Wilson, all of Denver; M. D. Thatcher, of Pueblo, Colo., and Arthur H. Woods, of New York.

Pacific Coast Markets

(*Concluded from Page 57*)

unattractive prices. From Seattle 2000 tons of scrap rail are booked for early movement. The f.a.s. price is $6.25 and freight $2.50 a gross ton. The c.i.f. price in Japan is said to be $9.10. Ordinary scrap is quoted here at $4.50 a gross ton f.a.s. and is said to be selling in the Orient at $7.50 c.i.f. Immediate bookings from Seattle approximate 1500 tons. The Japanese government is said to be the purchaser, working through local firms.

Simplified practice recommendation covering woven wire fencing has been reaffirmed without change. This recommendation has effected a reduction in the number of stock varieties from 552 to 69 and in the number of packages from 2072 to 138.

Here and There in Industry

HARNISCHFEGER CORP., Milwaukee, has appointed the Floradin Equipment Co., 40 West Fortieth street, New York, its welder representative in the metropolitan district of New York and northern New Jersey. It will handle the lines of arc welders formerly manufactured by the Northwestern Mfg. Co., Milwaukee, now produced by the Harnischfeger Corp.

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Shaffer Tool Works, Brea, Calif., has established a warehouse and sales office at Houston, Tex., in charge of Carl W. Vogt.

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Big A. Oil Burner Co., Chicago, manufacturer of burners for furnaces, has obtained a plant at Belleville, Ont., and will start production shortly.

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Mills Co., Cleveland, has appointed the Spickelmeier Fuel & Supply Co., 1080 East Fifty-second street, Indianapolis, sales representative in the central Indiana district, for its metal partitions.

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H. A. Brassert & Co., Chicago, engineers and contractors, have booked an order from the Globe Oil & Refining Co. to build a battery of Knowles coke ovens at its refinery at Lemont, Ill. The ovens will operate on heavy fuel oil tar from its cracking units.

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H. O. Swoboda Inc., 3530 Forbes street, Pittsburgh, has appointed E. H. Merrick, 3020 Coleridge road, Cleveland Heights, O., its sales representative in northern Ohio for its continuous electric heat treating furnaces and bare electric immersion heaters for viscous materials.

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United States Spring & Bumper Co. has completed improvements costing $50,000 at its plant at Vernon, Calif., and has added to its working force. John B. Rauen is president. The company manufactures chassis springs and bumpers for automobiles and has recently added a farm tool division.

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National Radiator Corp., Johnstown, Pa., has had reorganization plans approved by the federal circuit court of appeals. Plans provide for acquisition of the company's property for $2,250,000 by a committee and issuance of securities. Ninety-six per cent of debenture holders approved the plan.

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Blaw-Knox Co., Pittsburgh, manufacturer and designer of equipment for chemical and food products plants, has formed a connection with Weigelwerk A. G., Germany, manufacturer of brewhouse equipment. This gives complete service for the brewing industry in design and manufacture of brewhouse equipment of modern design.

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International Harvester Co., Chicago, plans to abandon its Deering Works at Chicago in a short time. The plant has been becoming obsolete as improvements were concentrated in the more modern McCormick works. The Deering plant is about 50 years old and more adapted to the manufacture of light machinery than large equipment.

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American Barge Line Co., Pittsburgh and Louisville, Ky., has secured a contract to barge 42,000 tons of fabricated structural steel for the New Orleans Belt Line bridge which will cross the Mississippi river above New Orleans. The first barge load of steel has left the Rankin, Pa., plant of McClintic-Marshall Corp., Bethlehem, Pa.

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Northern Equipment Co., Erie, Pa., manufacturer of feed water regulators, differential valves, pump governors and allied equipment, has assigned to I. C. DeHaven Engineering Co., 1125 Circle Tower, Indianapolis, which has been its representative for 10 years, all of northern Indiana except Porter, Lake, LaPorte, St. Joseph and Elkhart counties. Economy Equipment Co., Roosevelt building, St. Louis, also its representative for 10 years, has been assigned all of Illinois south of the fortieth parallel.

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Northwest Engineering Co., 28 East Jackson boulevard, Chicago, manufacturer of excavating and materials handling equipment, has appointed John C. Louis Inc., Baltimore, its representative in Maryland and Washington; Blaisdell & Foltz Equipment Co., Cincinnati, newly organized by A. B. Blaisdell and R. G. Foltz, has been made its representative at Cincinnati; C. J. Burke, Detroit, has been placed in charge of sales in eastern and southern Michigan.

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Young Radiator Co., Racine, Wis., has taken a large contract for air-conditioning equipment from a manufacturer of rail car equipment, consisting of evaporators, condensers, precoolers, coolers and heaters for various types. A department has been established for dehydration of evaporators and condensers. Heat transfer equipment of special nature is being supplied to several new concerns in the air-conditioning field.

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Taylor & Co. Inc., Norristown, Pa., manufacturer of vulcanized and phenol fiber, will start operations in its new plant early in May. Among products will be vulcanized fiber and laminated phenolic products, including noiseless gears. The executive organization of Taylor & Co. and its entire operating personnel is composed of men formerly associated with the Diamond State Fibre Co. and its subsidiary, the Celeron Co. J. M. Taylor is president, L. T. McCloskey sales manager, and C. N. Jacobs plant manager.

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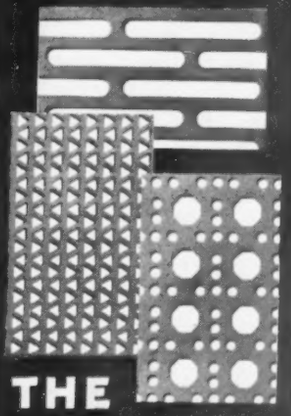

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New York

BATH, N. Y.—City council is considering a proposal to erect a municipal electric light and power plant to cost about $75,000.

BUFFALO—American Radiator Co. has resumed operations at its Bond plant here after two weeks suspension, running 32 hours per week, compared with 30 hours before closing.

OSWEGO, N. Y.—New York Public Service commission has ordered the crossing of the New York, Ontario & Western at East Seneca street eliminated. Cost is estimated at about $175,000.

New Jersey

CLIFTON, N. J.—Forstmann Woolen Co., F. L. Bradley in charge, 2 Barbour street, Passaic, N. J., is having plans made for a 1-story boiler house, 40 x 70 feet, on Randolph avenue, to cost about $28,000.

JERSEY CITY, N. J.—Standard Laundry Co., 985 Garfield avenue, plans a 1-story power plant addition at 963 Garfield avenue, to cost $28,000. W. M. Cory, 30 Church street, New York, is architect.

MANVILLE, N. J.—Great Eastern Breweries Inc., L. Knopf president, 92 Main street, plans a 6-story brewery, 143 x 370 feet, to cost $1,000,000. C. J. Kupper, 409 Main street, Bound Brook, N. J., is consulting engineer.

NEWARK, N. J.—Walter Gilby Alloy Co. has been incorporated with capital of $50,000 preferred, $74,000 class A common and $1000 class B common shares, to manufacture wire products, by Walter Gilby and C. Lillian Ayres, Newark. Lindabury, Steelman, Zinc & Lafferty, 24 Commerce street, Newark, are attorneys.

Pennsylvania

ERIE, PA.—Erie Brewing Co., J. M. Magenan vice president, is modernizing its brewery plant on separate contracts, at cost of about $40,000.

FREEDOM, PA.—Freedom Oil Co. has plans for expanding its plant and storage facilities at an expense of $125,000.

PITTSBURGH—Plant of the Simplex Battery Mfg. Co., New Castle, Pa., was burned March 27 with loss estimated at $50,000.

Ohio

CINCINNATI — New Amsterdam Brewing Co., 10 East Fortieth street, New York, is having preliminary plans made by Badgeley & Wood, 101 Park avenue, New York, for a brewery plant at Cincinnati to cost about $1,000,000.

FAIRFIELD, O. — Construction quartermaster, Patterson Field, will take bids early in the summer for a heating plant at Patterson Field, to cost about $160,000.

KENTON, O.—H. P. Jones Co., engineer, Toledo, O., has submitted proposals to estimate cost of erection of and probable revenue from a municipal electric light and power plant. A loan from the Reconstruction Finance Corp. is being negotiated.

Indiana

ANDERSON, IND.—Board of public works has retained Allen & Jagborg, Chicago, engineers, to prepare plans for rebuilding the waterworks plant, including a 2,000,000-gallon reservoir, water treating and chemical laboratories. Cost will be about $175,000.

AUBURN, IND.—City is having plans made for remodeling its water works and electric light plant.

Illinois

BELLEVILLE, ILL. — Baker-Nagle Co. will reopen its stove and furnace foundry within a short time and may employ upwards of 500 men in the several departments. The receivership begun Aug. 17 has been terminated, permitting the reopening.

CHICAGO—Aero-Whirl Plane Inc., 11 South LaSalle street, room 3200, has been incorporated with $10,000 capital to manufacture flying machines and equipment, by John V. Clinnin, 11 South LaSalle street.

CHICAGO—Wheelco Vacuum Products Co. 111 West Monroe street, room 717, has been incorporated with 10 shares no par value to manufacture machinery, by Henry M. Goldsmith, 111 West Monroe street.

Southern States

WASHINGTON — Bureau of supplies and accounts, navy department, will open bids April 11, as follows: Schedule 9859, one arc welding set and spare parts, for Brooklyn, N. Y.; schedule 9843, six motor-driven rotating pumps, for Annapolis, Md.; schedule 9817, three motor-driven radial drilling machines for Puget Sound, Wash.; schedule 9820, one motor-driven radial drill press for Puget Sound, Wash. April 18, schedule 9827, three motor-driven sensitive drilling machines, for Puget Sound, Wash.

Oklahoma

KIEFER, OKLA.—J. D. Amos, formerly with the Texas Bit & Boiler works, Gladewater, Tex., has opened a shop here on United States highway 75, specializing on boiler and welding work.

TULSA, OKLA.—Universal Welding Co. has been established at 109 South Cheyenne avenue by A. F. Holder and Elbert Russell to specialize in acetylene and electric welding.

TULSA, OKLA.—Torpedo Shell Mfg. & Welding Co. has leased the former Emsco Derrick & Equipment Co. plant on Sand Springs road and has installed equipment for the manufacture of sheet metal containers for shooting of oil wells. E. R. Brenneman is president and H. E. Coby is manager.

Texas

COLLEGE STATION, TEX.—A. & M College, S. C. Bailey secretary board of directors, is taking bids until April 8 for erection and equipment of an addition to the college light and power plant and construction of a sewage disposal plant. The college architect, College Station, Tex., will furnish plans and specifications.

GLADEWATER, TEX.—Pacific Oil & Refining Co. has been incorporated with $5000 capital to operate an oil refinery, by R. B. Farris, manager.

HOUSTON, TEX.—Duraflex Piston Mfg. Co., 3215 Bowen street, Dallas, Tex., has acquired a site here for a plant to manufacture pistons for gas engines. L. M. Manley is general manager.

HOUSTON, TEX.—Appleman Bit Service Co., Beaumont, Tex., has moved its shop headquarters to Houston, leasing property at 1945 St. Bernard street where it will operate a machine, boiler, blacksmith and welding shop for repair of oilfield drilling tools.

KILGORE, TEX.—Pan-American Refining Co. has been incorporated with $10,000 capital to operate an oil refinery, by Thomas Potter, manager and plant superintendent.

MIDLAND, TEX.—Willis Truck & Tractor Co. has been incorporated with $10,000 capital by J. J. Willis to operate a garage and repair shop for automotive and tractor work.

SAN ANTONIO, TEX.—Alamo Foods Co., B. B. McGuisey president, is taking bids for altering its plant to a brewery and installing additional equipment, at cost of about $28,000.

WICHITA FALLS, TEX.—Panhandle Refining Co., Panhandle building, has leased the former Dixon Creek Oil & Refining Co. plant at King's Mill, Tex., and plans improvements to cracking stills and other equipment.